

# A Handbook for Tour Guides Daintree River to Cape Tribulation



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# *1. Introduction*

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# Foreword

This Handbook is for tour guides working in the Daintree River to Cape Tribulation area, both those who are new to the job and those who are already well established in the industry.

When designing the Handbook, our aims were to provide an accurate resource for the three main players – tour guides, visitors and operators:

- for guides we wanted a practical resource with plenty of information about the route they travel;
- for visitors, we wanted an extensive range of information to match the wide variety of their interests;
- for operators, we wanted to provide them with a training tool for their new guides, and a glossary and further reading list for their experienced guides.

The book is divided into four sections:

- **Section One** discusses the basic concepts of ecotourism, tried and true methods of successful guiding, and introduces the area's Aboriginal custodians and local residents.
- **Section Two** introduces you to Talking Points between the Daintree River and Cape Tribulation. Information on each Talking Point can either provide the basis of your commentary or serve to supplement your own knowledge. We have tried to provide much more information than would be required on any one day, so that guides have the opportunity of 'reading' groups of passengers and matching the level of information to the requirements of each day's group.
- **Section Three** gives a more comprehensive view of the special natural features: *Glimpses of Wet Tropics Wildlife* deals with noteworthy animals and particular plants; *What Makes the Daintree Coast Special* discusses aspects peculiar to the Daintree Coast including Rare Plants, Primitive Plants and Primitive Flowering Plants.
- **Section Four** contains some useful extras you may find handy – Evolutionary Timelines, Maps and Reading Lists.

The Handbook is supplemented by a small **Flipbook** illustrating features, plants and animals. The Flipbook is designed to be left in the vehicle close at hand, so that when you're talking about a subject you can pass around the appropriate illustration to your guests.

Symbols are used to cross-reference the different sections:



refers to other sections in the Handbook



refers to the Flipbook for an illustration to show your guests

A word of warning: people often expect a wilderness experience rather than a coastline that has experienced significant development. It is a good idea not to enhance these expectations by overglamorising the area. Studies have found that the better informed the visitor is, the less likelihood of disappointment. Here is the challenge! Before your visitors reach their destination you have the task of bringing their expectations to a realistic level, without generating disappointment. *Good luck!*



# The Business of Ecotourism

‘Ecotourism opens the curtain that mass tourism leaves drawn.’

A curious worldwide phenomenon has begun. Millions of people all over the world have realised the earth’s remaining natural environments are immensely valuable. People are travelling to the far corners of the earth to experience its natural beauty and understand its diversity. A new type of tourist has evolved – the ‘ecotourist’.

Ecotourism Australia defines ecotourism as: “ecologically sustainable tourism with a primary focus on experiencing natural areas that fosters environmental and cultural understanding, appreciation and conservation” (recognising that “ecologically sustainable” involves an appropriate return to the community and long-term conservation of the resource). In 2001 economists estimated the value of tourism based on the Daintree Coast was \$468 million gross a year (Kleinhardt-FGI). In compiling this Handbook, we asked experienced operators about tips for running an ecotourism business. Approaches varied but most agreed with the following tips which were adapted from a list from the Office of National Tourism.

## Tips for running an ecotour business

- 💡 Too many people at one site can be very damaging to the environment – and to your visitors’ experience. Working with other companies and following the permit system will help to avoid overcrowding at sites.
- 💡 Research indicates passengers are often very keen to help with donations towards the environment. Consider pledging a sum of money for each passenger, or invite passengers themselves to contribute to a local environmental fund.
- 💡 Develop partnerships with your host community by visiting local information centres, tours, shops and food outlets so that your passengers have an opportunity to interact with local people and buy their products. It also gives your guides a break!
- 💡 If your tours wade through streams, swim or paddle in the ocean, ask them to avoid using insect repellents and sunscreen which may pollute the water. Many sites are now equipped with taps so visitors can rinse off before entering the water.
- 💡 Many companies have a policy of buying CFC-free aerosols, refrigerators and insulation and

## “REAL” TOURISM

Arthur Frommer (1991) calls typical sightseeing an activity as vapid as the words imply:

*‘We rove the world, in most cases, to look at lifeless physical structures of the sort already familiar from books and films and enjoy a brief thrill of recognition, return home and think we have travelled.’*

He proposes that travel is scarcely worth the effort unless it is associated with people, learning and ideas. To have meaning at all, travel must involve an encounter with new and different outlooks and beliefs. At its best, travel should challenge our preconceptions and most cherished views, cause us to rethink our assumptions, shake us a bit, make us broader-minded and more understanding.

minimising the use of plastics. Sometimes natural solvent cleaners can be used instead of harsh chemicals.

- 💡 Explain to visitors why it is necessary to turn off vehicle engines when stationary. It is less fuel-wasting to run the engine for a few minutes before the passengers get back on after a stop, than to run the engine all the time – and your passengers will appreciate being able to hear the birds and the rustle of leaves – and not smell fumes.
- 💡 Driver training courses can improve fuel efficiency.
- 💡 Pack racks and large trailers increase air resistance and increase fuel waste.
- 💡 Sending waste oil, old batteries and used tyres to a garage or local council site for recycling or safe disposal is a good advertisement for your ecotourism business.
- 💡 Garages fitted with separate trade waste drains prevent pollutants from seeping into the surrounding environment.

## Good guides are the industry's best asset

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- 💡 Driving to Cape Tribulation every day leads to a high risk of 'burnout' among guides. Burnout can be avoided by keeping guides exposed to new information and by offering them alternative trips.
- 💡 Arranging for guest speakers with specialist knowledge can often provide an inspirational spark for guides. Alternatively, guides can benefit from being allowed time to attend interesting lectures or follow up work-related studies.
- 💡 Providing guides with a 'little black book' for notes about the day builds up a useful collection of information - anything from nature entries, what was good or bad about the day, or even a funny saying that popped up during the day.
- 💡 A reference library which includes books, magazines, newsletters, bird tapes and videos is invaluable.

📖 Bibliography & Reading List

## Caring for your visitors

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- 💡 A guestbook can be a good insight into visitors' experiences and provides feedback on the tour. This can then be relayed at regular staff meetings.
- 💡 Sometimes visitors will have a particular interest or knowledge. If tour desk staff can draw out this information and pass it on, guides will have a chance to read up on any specialist information which will make the day more enjoyable.
- 💡 Visitors appreciate knowing what to wear and what to bring such as appropriate footwear, raincoat, hat, sunscreen, insect repellent (perhaps offer to provide an eco-gentle repellent), how long the tour will take and whether any extra money will be required.
- 💡 Reminding parents that supervising children is their responsibility is a hard one - do it as gently as possible!
- 💡 Assuring your visitors that guides are fully trained in emergency procedures will help to put them at ease.

## ECOTOURISM AUSTRALIA

Ecotourism Australia was formed following Australia's first ecotourism conference in Brisbane in 1991. It provides an opportunity for members to get involved in all aspects of ecotourism and helps members to develop an understanding of the ecotourism industry and of natural and cultural area management needs. Ecotourism Australia provides the following benefits to members:

- monthly e-news communications
- three printed newsletters per year
- ecotourism representation
- conferences and workshops
- contacts and networking with over 600 members
- annual Australian Ecotourism Guide and listing - a who's who of ecotourism in Australia at [www.ecotourism.org.au](http://www.ecotourism.org.au)
- access to research trends and case studies on ecotourism
- management of the Eco-Certification program
- management of the Ecoguide Australia certification program.

### contact details:

GPO Box 268 Brisbane 4001  
Phone (07) 3229 5550 Fax (07) 3229 5255  
website: [www.ecotourism.org](http://www.ecotourism.org)  
email: [info@ecotourism.org.au](mailto:info@ecotourism.org.au)

## Time - your biggest enemy

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Are you trying to fill a day with too many activities? Today's tours are competing with staged programs on television. Every few minutes another animal is pulled from its home or the story of Gondwana whizzes by on fast forward... Perhaps ecotourism should stress that more time will be spent at certain places (time for reflection, isolation) rather than a full day of many hurried destinations.

## Further information

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Read *Best Practice Ecotourism* Commonwealth Department of Tourism 1995 (Kleinhardt-FGI)

# Hints for Guides

*'To look is one thing  
To see what you look at is another  
To understand what you see is a third  
To learn from what you understand is something else  
But to act on what you learn  
Is what really matters ...'*

*(anonymous)*

Compiling hints for guides which are useful without preaching is an almost impossible task! So... we approached experienced guides for their ideas. The result is the following list which is comprehensive to say the least! A lot will already be second nature, but hopefully there are some helpful ideas here, even for the experts.

Guides must do far more than educate visitors. They are also expected to be entertainers, emergency mechanics, weather forecasters, nursemaids and capable of answering every question from 'where is the next toilet stop?' to 'which species of Gondwana Angiosperm families are found in rainforests today?' It takes a multi-talented person to be a tour guide! Good guides conduct themselves with seemingly little effort and a palpable sense of joy, so that anyone observing them feels drawn to the place, the experience, and the guides themselves. As with all forms of art, much more is occurring than first meets the eye.

## Don't Just Inform - Interpret

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Your visitors are coming to a new world when they arrive on the Daintree Coast. They don't understand what they're seeing, and it is up to you to explain it to them. That doesn't mean you have to read out an entire dictionary of botanical terms. You need to mix scientific language and concepts with history and weave them into stories that involve the heart, not just the head. Welcome to the art of interpretation!

## What is Interpretation?

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Interpretation is a recognised profession. People spend years at university learning about it, and there are some excellent books and journals on the subject. The Queensland Environmental Protection Agency describes interpretation as "the process of stimulating and encouraging an appreciation of our natural and cultural heritage and of communicating conservation ideals and practices." (A bit long-winded, but worth remembering!) Legislation and management alone cannot protect our heritage - interpretation helps by stirring people to support and practice conservation in the way they live their lives. In this way, interpretation is more than just environmental education or information. It involves helping people change how they perceive

themselves and the world. Experienced guides believe successful interpretation has four basic qualities:

### Enjoyable

Research shows enjoyment is an addictive need in people. If we don't get it from our external environment we retreat into our own daydreams.

### Relevant

What people hear must be meaningful and personal so they can take it in easily. They respond to information and ideas which connect with their lives.

### Organised

People naturally organise information into neat packages to remember it. Research shows most people don't remember more than three to five main ideas, so limiting yourself to no more than five messages and linking them all together will help visitors remember your overall theme.

### Thematic

A theme is not a topic. A topic is just a subject matter like "primitive flowering plants". A theme is the main point or message you are trying to communicate. (eg. "Primitive flowering plants are living records of Earth's evolution and it's important they are protected.") Themes can plant a seed in people's minds that create a new way of thinking. People remember themes - they forget facts (although some passengers *think* they need facts!)

## So, you want to be the perfect tour guide ...

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Learning to be a perfect guide is a combination of intuition and experience. You certainly can't learn it just from reading a book! However, this collection of

hints provided by old hands may provide some inspiration. Hopefully, after you've sifted through this huge list of "do's and don'ts" you'll find some tips that you can feel comfortable with and which can be applied to your passengers of the day.

## Be prepared

Pre-planning and preparation may be painful, but it will pay off in the long run because it will make your job easier, and give a sense of purpose to the day.

**Do Your Background Research.** Read this Handbook, go to the Reading List for more detailed information, take a tour with an experienced colleague.

### Decide the main objectives of your tour.

These should reflect your company brochure so that you meet your guests' expectations. (Hopefully, your tour brochure accurately reflects your guests' Daintree Coast experience. You may want to tactfully raise any discrepancies with management and maybe suggest alternative selling points for the company brochure.)

### Choose a few key messages you want your visitors to remember.

These are the messages which will be emphasised throughout the day, with different examples and stories at different sites. They will be the threads which hold the day together, and will help your visitors to appreciate your knowledge and finish the day with some memorable take-home messages.

**You can even write a rough script.** List the main sections of your journey and the sites you will visit. Use this Handbook to develop stories to illustrate your key messages at particular sites.

**Assemble your props.** They can help to remind you what you want to say. You may need a small shoulder bag to carry binoculars, bird book, hand lens, map or seeds. It is illegal to collect from national parks, but there may be other props that will entertain your visitors - an article from the history section of 'The Cairns Post' or a piece of poetry you've memorised.

### Now practice on a friend or colleague.

A practice run will give you a chance to figure out what works and what doesn't. Think about how you can vary your script stories and pitch them to suit different visitors. It's natural to be nervous, but try to imagine you are watching yourself on the tour. How do you want to appear?

## CONVERSIONS

### Help your overseas visitors convert metric to imperial:

- kilometres to miles: divide kilometres by eight then multiply by five (1.6km = 1 mile, 60 mph = 100 kph);
- kilograms to pounds; the rough estimate is a bit less than half, as 2.2 lbs = 1 kg;
- hectares to acres; about 2.5 acres to one hectare
- metres to feet: multiply by three;
- centimetres to inches: use your fingers! For every inch of rain we count 25mm.

Alternatively, carry a pocket calculator!

## Meeting your guests

- 💡 Introduce yourself, then everybody else. Break the ice, be warm and friendly. Visitors sense immediately whether a guide cares about them.
- 💡 Ask questions. In the first ten minutes you should be able to identify your group and their special characteristics. This will help you to pitch your messages for the rest of the day.
- 💡 Create interest by explaining to your guests what they may see and experience during the day. This will create some anticipation and tie the tour together. Start introducing your themes.
- 💡 Prepare and reassure your guests about the practicalities of toilet stops, difficulties of the walks, etc.
- 💡 Show enthusiasm and it will make your guests feel enthusiastic too. The key is to share what you love about the place. Be passionate!
- 💡 Cairns guests will have a long day travelling in the vehicle. Get them talking to each other about what they've been doing in the area, sharing their experiences and knowledge. Talk about what it's like to live in Tropical North Queensland. Perhaps introduce your guests to some Australian music.

## Be a good communicator

- 💡 Studies suggest the best guides see themselves as hosts. They enjoy going out of their way to make their guests feel welcome.
- 💡 Speak clearly and simply. Be a good listener. Acknowledge people when they speak to you and don't interrupt them.
- 💡 Maintain eye contact with the whole group (not just those demanding your attention).
- 💡 Wait for the whole group to move close to you for easy hearing before you start talking, and make sure



everyone can see what you're talking about.

- 💡 If someone asks a question, repeat it to make sure everyone has heard it.
- 💡 Make sure the group is comfortable. You want their undivided attention. Are insects biting them, is the sun in their eyes, is there too much noise from passing traffic?
- 💡 Vary the pitch and tone of your voice so you don't sound boring.
- 💡 Individuals learn in many ways besides listening to you talk. Get your guests to use all their senses - touch, smell, hearing and taste - so that the experience and the messages stay in their minds. Encourage people to actively do things.
- 💡 Relate messages to your visitors' lives. They are more likely to understand and remember them.
- 💡 Sometimes it's useful to suggest something for your visitors to do, look for, or think about between stops.
- 💡 Avoid sexist, demeaning or racist remarks or behaviour which may offend people.
- 💡 Lead by example. Be a polite driver, pick up rubbish (even if it's not yours) and encourage minimal impact behaviour at visitor sites.
- 💡 Give your guests time to digest information, observe and explore. Leave something for people to discover for themselves!

## Troubleshooting

- 💡 Be flexible enough to cope when something unexpected happens and enjoy spontaneous interruptions. Let birds and other wildlife be heard.
- 💡 Read your audience using non-verbal clues. Are they shuffling their feet or looking away? Time to finish up or change the subject!
- 💡 Have a plan ready for possible emergency scenarios (eg. someone twists an ankle on a track).
- 💡 If someone continually disrupts the group or constantly upsets you, take them aside and ask for their cooperation - attempt to solve the problem without spoiling the whole group's experience.
- 💡 Some guests may have a lot more knowledge on a subject than you have. Don't be threatened! Give them space to share their knowledge and use them to the group's (and your) advantage. Deal gently with ignorance.
- 💡 Someone asks a question you can't answer. Don't make something up and risk being shown up as an imposter. Try to find out by the end of the day - places such as the Daintree Discovery Centre, the 'Bat House' Environment Centre and QPWS offices are useful information sources.
- 💡 Try not to say negative things - provide both sides of the story.

- 💡 Don't be too concerned if something goes wrong. Remember what happened and improve next time. Learn from your mistakes as well as your triumphs. Your group wants to have fun, so maintain a sense of humour and perspective!
- 💡 Good tour guides have personality. Let yours show!

## SOME EXAMPLES OF HOW TO TURN INFORMATION INTO INTERPRETATION

### *Personification*

Make something come alive by humanising it.  
*eg. 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.

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

### *Similes and analogies*

Make comparisons and show similarities.  
*A rainforest tree is an apartment building with many tenants living together.*

### *Emphasize size*

This makes things come alive and seem more significant.

*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.  
*Compare our largest and smallest cycads.*

### *Use active verbs*

Use colourful and descriptive words to describe a process rather than passive verbs. Rather than 'Double-eyed Fig-parrots nest in hollow limbs' try:

*Seeing Double-eyed Fig-parrots gouging soft timber for a nesting chamber is like watching a sculptor at work.*

### *Ask leading questions and open-ended questions*

*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*

*How is it that fledgling White-tailed Kingfishers can find their way back to New Guinea after their parents have left?*

## Common Mistakes

**The Human Encyclopedia.** The walking, talking encyclopedia spends a lot of time regurgitating facts, figures and latin names. Guests normally wear a glazed expression from 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 avoid going 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!

## Keep training

Constantly re-evaluating and changing your performance will make you a better guide and save your sanity if you're repeating the same trip day after day. Some of the key things to ask yourself are:

- Did I pitch the messages at the right level? Was it too scientific, too 'Australian' or too rushed?**
- Did people look like or say that they were having a good time?**
- Did people learn something?**

Ask your guests. Circulate a guest book with plenty of space for comments, or simply ask them what they enjoyed most about the day. Occasionally use a simple evaluation form (keeping it anonymous will encourage honest responses).

Constantly upgrade your knowledge and you'll stay enthusiastic and love your job. Keep a naturalist's diary about the interesting things you see during the day, and over time seasonal patterns will emerge. If you come across something you've never seen before, check it out in reference books when you get home. Visit other interpretive sites, talk to experts and attend other training opportunities. Put your name on the mailout list for *Tropical Topics* (ph 4046 6674) and the Rainforest CRC newsletters (ph 4042 1246) and add your own sections to this Handbook.

## TAFE Courses

TNQ TAFE offers a Nature Based and Eco Guide Program for those entering the guiding profession, and for experienced guides wishing to gain formal qualifications. Courses run at Cairns, Mossman and Innisfail campuses. Workshops are held on campus, or alternatively various flexible delivery methods are

## WALK BACK IN TIME

Mary White who wrote the definitive text '*Greening of Gondwana*' says we are obsessed with time. Watches, clocks and calendars rule our lives. We think in lifetimes, and antiquity to us may be our grandparents' generation, or the arrival of Europeans in Australia.

Put the present in perspective and help your guests to think in geological time - in millions of years, not decades or centuries - so that they can understand the antiquity of the rainforest and the evolutionary legacy it contains. One easy way to explain it is for your guests to 'measure time' while on a walk:

1mm = 100 years  
10mm (1cm) = 1000 years  
1metre = 100,000 years  
10 metres = 1 million years

eg.

*At 1mm, Europeans arrived on the Daintree Coast*

*At 2cm, Christ was born*

*At 50 cm, a cool, dry ice age contracted rainforests*

*At 1000 metres, the first flowering plants evolved*

*At 4000 metres, first land plants evolved from seaweed*

 **Timelines**

available such as workbooks, workplace assessment, Recognition of Prior Learning, and online delivery. Nationally accredited units include: rainforest flora, fauna and landscapes; indigenous culture; interpretive activity planning and delivery; marine environments; and minimal impact touring. Certificates III and IV in Tourism (Guiding) are available, or individual units can be completed. These link to the Wet Tropics Tour Guide Accreditation and Ecoguide accreditation. For further information visit [www.tnqit.tafe.net](http://www.tnqit.tafe.net) or telephone 1300 656 959.

## Further Information

Join the Cairns Historical Society (ph: 4051 5582) for access to their extensive historical collections at the Cairns Museum and to receive regular newsletters on local history. Council libraries hold historical and ecological information. Libraries at the Cairns TAFE Campus and at James Cook University, Smithfield have an extensive range of information on rainforest-related subjects including the latest journals and specialist magazines. Most bookshops will order titles for your own reference collection.

This chapter draws heavily on the experiences of local guides, *The Art of Interpretation* by the Queensland Environmental Protection Agency, *Environmental Interpretation* by Sam Ham and *The Professional Guide - Dynamics of Tour Guiding* by Kathleen Lingle Pond. An excellent new text book *Enriching the experience: an interpretive approach to tour guiding* by John Pastorelli was published by Pearson Education in 2003.

# Kuku Yalanji People and the Daintree

*'Welcome to Kuku Yalanji country.  
The area you are travelling through has  
great spiritual and cultural significance to our people'*

The Mossman Gorge Community Rangers provided this information. It has been approved by Kuku Yalanji elders for you to tell your guests.

The entire Daintree/Cape Tribulation/Bloomfield region is a small part of the Kuku Yalanji tribal area. As a whole, this extends from Mossman in the south to Annan River in the north and as far west as Laura and Palmer River. The Kuku Yalanji people are a single tribal group as distinct from the neighboring Kuku Yimidhirr to the north and Jabugay/Yirrigandji to the south. The groups to the east of the range associated with the rainforest environment are more commonly referred to as Eastern Kuku Yalanji. They have a single language with slight dialect variations according to various sub-groups. The most commonly acknowledged in the area today are Kuku Nyungkul (upper Annan River catchment), Kuku Yalanji (Bloomfield and upper Palmer area) and Kuku Jalunji (coastal). These larger nations consist of smaller, geographically bound clan estates whose ownership and use rights are passed through the male line. These family estates are essentially a complex network of sites of religious, resource or other practical significance, along with the lands and resources between them.

Kuku Yalanji mythology and presence in this region originates from the actions of the Rainbow Serpent (Kurriyala) in a very ancient time (Nujakura) and its creations of the environment as we see it today. Many prominent features of the region have a complex mythological component. These may be either animal-like, human-like or an element of the universe. As a result, story places or cultural sites represent past activities or current residence beneath the surface and have a very high cultural significance, so are often considered dangerous to approach or take resources from, except in prescribed ways or by the right person. The mythology and other powerful properties attributed to most story places are the reason why the Kuku Yalanji regard damage and destruction or inappropriate management as not acceptable.

The islands, beaches, creek mouths, backing dunes and lowland rainforest of the Daintree area also provided a major focus for camping and other places of use for the Kuku Yalanji. Combined with the fringing reef and sea, a diverse range of resources were available to the Yalanji people on a systematic, seasonal and cultural basis.

Characteristic cultural features of the Daintree region include a complex network of Aboriginal walking tracks. These were based around two major tracks, one along the coast and one further inland which were joined by an intricate network of associated tracks which connected all destinations, places of cultural importance and resource use. Many of these were later developed into the roads and tracks used today.

Open sites are also common in the rainforest-covered coastal flats and coastal area as isolated camps. Such sites generally consist of small nut cracking rocks, grinding implements or a combination of both. Artifacts are also often present.

## Post-contact, settlement and land use

Although Cook in 1770 and King (in 1827) passed near the coast, Europeans did not enter the region until the late 1870s when red cedar was discovered and harvested on the Daintree and Bloomfield Rivers. The Daintree was opened for selection in 1877 and blocks of land were taken up at Bloomfield in 1882.

The Mason family were the first white settlers in the Cape Tribulation area. At the time of their arrival Walter Mason reported that more than 300 Aborigines lived along this coast in small family units and many more camped here on their way to adjacent areas.

Following the cedar cutters and tin mining activity in and around the region, combined with permanent European settlements, the Kuku Yalanji were forced into Missions at Bloomfield in 1885, Mossman Gorge (1916) and Daintree River (1961). From then on traditional lifestyles were irreversibly changed with the Kuku Yalanji subjected to various Government policies of the time which ranged from 'dispersal' to 'assimilation' to the current 'self-determination' policy.

Despite all of this the Kuku Yalanji have managed to maintain many important aspects of their cultural identity and most predominantly their use, association and connection to Kuku Yalanji Country.

To the Kuku Yalanji people today, the concept of nature and culture being inextricably bound continues. As a result the Daintree area and its features maintain their high cultural significance, not only in relation to traditional ownership and native title interest to the land, but also because of its complex system of totemic features, oral traditions, its important plant and animal species, other significant cultural places, old and current camping places, walking track networks and their archaeological and environmental features. Amongst the Kuku Yalanji there is extensive knowledge of boundaries, family connection, place names, bush medicine and other detailed cultural information. As culture is not static, modern lifestyles contain a mix of these traditional practices with more common contemporary practices.

Due to the strong cultural connection to their country the Kuku Yalanji are aiming to have an increased and more active involvement in cultural resource management issues at all levels and within all Government management agencies. Community Rangers based at Mossman Gorge undertake cultural heritage assessments on request and are available for further cross cultural information.

The Kuku Yalanji also have established a cultural tourism venture based at Mossman Gorge. It is likely that this will expand into the Daintree area in the near future to offer tourists the opportunity to gain an insight to the complexities of the Kuku Yalanji culture.

## Using Kuku Yalanji information

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Today's tour guides are confronted with the legacy of years of inappropriate use of cultural information. You have a responsibility to convey the growing awareness of intellectual property rights.

You will need to consult with some of the following people regarding cultural information you wish to use.

- Kuku Yalanji Dreamtime Tours Information Centre and Shop Ph 4098 1305
- Mossman Gorge Community / Bamanga Bubu Ngadimunku Inc. PO Box 171 Mossman 4873 Ph 4098 1046
- Wujal Wujal Community Council Ph 4060 8155

## Further information

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Read *A Guide to Traditional Aboriginal Rainforest Plant Use* by J. Roberts, C.J. Fischer and R. Gibson available from the Mossman Gorge community.

Read *Aspects and Images* by C.J. Fischer and Balla Ross-Kelly available from the Mossman Gorge community. Phone 07 4098 1305

Read *Encyclopedia of Australia* vols1 and 2

# Living in the Rainforest - modern day settlers

**'Tourism will only survive here if it has the support  
of the people who live here'**

*Daintree Alliance Inc.*

## Residents as caretakers

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Visitors to the Daintree Coast are often surprised to find residential communities in parts of the rainforest where they expected to see uninhabited 'wilderness'. Tension rises when residents living on their own freehold land are thought to be 'living in the national park' or 'squatting on World Heritage land'. Very few of the 1083 freehold subdivisional blocks north of the Daintree River were included in World Heritage listing.

## Supporting the locals

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Tour guides and visitors are encouraged to forge reciprocal links with the community by:

- 💡 offering local schools/special interest groups free or discounted ecotourism experiences
- 💡 offering local students work experience
- 💡 respecting the privacy of residents by staying away from residential streets and off privately owned land unless by agreement
- 💡 not intruding into sensitive areas or areas close to residences (such as swimming holes)
- 💡 visiting locally owned and operated walks and interpretive centres
- 💡 using local guides where possible
- 💡 buying local produce and souvenirs
- 💡 using local accommodation for extended stays
- 💡 consulting with community representatives about the tour operation and regularly involving them in relevant strategic decisions
- 💡 offering support to local not-for-profit groups (eg. Cassowary Care Group, Wildlife Rescue) or events that contribute to the welfare of the community (eg. make a financial contribution, donate a prize, provide technical assistance, or just participate!)
- 💡 minimising visitor saturation and associated problems through good management
- 💡 providing visitors with information about how they can minimise negative impacts on the local community
- 💡 taking rubbish home.

## Living on the Daintree Coast

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If you get an opportunity, introduce your guests to a local resident so that they can describe firsthand what life is like on the Daintree Coast. It is not your normal suburban lifestyle - no mobile phones, limited television and radio reception, and no town sewerage system.

The nearest supermarket and police station is at Mossman. There is a twice weekly mail service on Tuesdays and Fridays from the Mossman Post Office.

However, life on the Daintree Coast is becoming increasingly suburban - there are three general stores, a pharmacy, a mobile library visits Alexandra Bay School fortnightly, local newspapers like 'The Cairns Post' can be bought every day, and there is a twice daily bus service from Cairns, Port Douglas and Mossman.

The Alexandra Bay Sporting Club hosts sporting and community events at the Diwan Reserve on Tea Tree Road. Nearby is the Cow Bay Health Clinic.

High rainfall and humidity make living in the rainforest quite different to living elsewhere. Cuts and scratches can become infected with bacteria and tropical nasties, so take them seriously.

Rainforest residents learn to live with mould, low light and dampness. Good house design is essential.

Comfortable living relies on keeping living areas cool and dry and making the most of available light.

Raised floor construction helps to retain natural air flow and drainage. High ceilings and air vents allow heat to rise and escape above head height. Large eaves protect walls from rain. Wide verandahs extend living areas and double up as clothes-drying areas in the wet season.

Cupboards need to be well-ventilated, especially clothes and linen cupboards. Crazy as it may seem in such a warm climate, many houses have small combustion stoves or heaters to keep clothes dry. Being able to offer visitors sheets and towels which don't smell musty is quite a feat in the rainforest!

The Daintree Coast is home to diverse animal and plant life - many of which are unique to this region.

Living in harmony with the wildlife is not easy. Residents may experience White-tailed Rats chewing through waterlines, pigs in the vegetable patch, and snakes finding that a nice, dry house is a perfect place to wait out the wet season!



## Supporting local businesses

Many residents have chosen ecotourism as a sustainable way to earn a living from the rainforest. They play an important role by providing goods and services such as tours, accommodation and food to commercial tours and independent travellers. Many tour operators include local businesses on their visits to the Daintree Coast. This gives guides a break, gives visitors an opportunity to meet locals, and helps the local economy. Here is a list of businesses from the Daintree Ferry to Cape Tribulation beginning with operators who specialise in rainforest interpretation and information. Visiting these sites provides an opportunity for your guests to get away from crowds and enjoy a more exclusive rainforest experience. More information about many of these businesses is available at the website: [www.daintreecoast.com](http://www.daintreecoast.com)

### **Daintree Discovery Centre** 4098 9171

Comprehensive introduction to the rainforests featuring 25 m canopy tower, aerial walkway, theatres and touchscreens. Refreshments. Admission fee.

### **Cooper Creek Wilderness Rainforest Walks** 4098 9126

Guided walks through spectacular World Heritage rainforest in the area's most biologically diverse valley. Advanced Ecotourism Accreditation

### **Cape Tribulation Wilderness Cruises** 4098 9052

Join the only cruise permitted in the Cape Tribulation section of Daintree National Park on a mangrove discovery tour in search of saltwater crocodiles.

**Noah Valley** 4098 9187 Tour operator access only. Outstanding covered lunch venue on the banks of Noah Creek with two unique walking tracks showing off the extraordinary rare, scenic and natural values of the area.

**Mason's Tours** 4098 0070 est. 1981 Guided walks on private jungle trails in spectacular rainforest including croc spotting night walks. Half and full day 4WD safaris on Bloomfield Track.

### **Jungle Adventures Cape Trib** 4098 0090

Easy to moderate walks led by scientist guides on trails through private old growth forest. 1hr tour through and over forest canopy attached to flying fox or zip lines.

### **'The Bat House' Cape Tribulation Environment Centre** 4098 0063

For information/bookings on reef, rainforest, the tropical environment visit the Bat House. Open 10.30 am to 3.30 pm, \$2 adult entry.

## Local businesses at your service

### **Daintree River Public Wharf Area**

Bruce Belcher's Cruises 4098 7717  
Daintree Connections - river cruises 4098 6120  
Daintree Estuary Cruises 4098 6120  
Daintree Fishing & Photography Tours 40907776  
Daintree Rainforest River Train 4090 7676

Far North River Safaris 4090 7041

Mangrove Adventures 4090 7017

Nice n Easy Cruises 4098 7456

Solar Whisper Cruises 4098 3140

### **Forest Creek**

Daintree Manor Eco-Retreat 4090 7041

Daintree Paradise B&B 4090 7751

### **Cape Kimberley**

Koala Lodge Resort 4090 7500

### **Cow Bay**

Cow Bay Air Service 4098 9153

Cow Bay Homestay 4098 9151

Cow Bay Hotel 4098 9011

Cow Bay Service Station 4098 9127

Crocodylus Village Resort and Tours 4098 9166

Epiphyte B&B 4098 9039

Ebenezer Cottage 4098 9041

Floravilla Art Gallery 4098 9100

Le Bistrot Bar and Restaurant 4098 9016

RACQ 4098 9037

Rainforest Retreat Motel 4098 9101

The Waterhole Restaurant 4098 9231

Wait-a-while B&B 4098 9195

### **Hutchinson Creek**

Daintree Icecream Company 4098 9114

Daintree Wilderness Lodge 4098 9105

Fan Palm Cafe and Boardwalk 4098 9119

### **Hutchinson Hill**

Cockatoo Hill Retreat 4098 9277

Daintree Tea Company 4098 9139

Lync Haven 4098 9155

Rainforest Village Caravan Park, Store, ATM 4098 9015

### **Cooper Creek and Thornton Beach**

Daintree Deep Forest Lodge 4098 9162

Daintree Entomological Museum & Gallery 4098 9045

Daintree Heritage Lodge & Daintree Spa 4098 9138

Cafe On Sea Kiosk 4098 9118

### **Cape Tribulation**

Boardwalk Take-away and Jungle Lodge 4098 0034

Cape Trib Beach House & Horse Rides 4098 0030

Cape Tribulation Camping 4098 0077

Cape Tribulation Exotic Fruit Farm B&B 4098 0057

Cape Trib Farmstay 4098 0042

Cape Tribulation Pharmacy

Cape Tribulation Retreat B&B 4098 0028

Cape Trib Sanctuary home rental/B&B 4098 0138

Cape Tribulation Store and Info Centre 4098 0070

Coconut Beach Resort & Canopy Crane 4098 0033

Dragonfly Gallery and Cafe 4098 0121

Ferntree Rainforest Lodge 4098 0000

Jungle Treehouse B&B, Adventure Tours 4098 0090

Myall Take-away 4098 0086

Tropical Paradise B&B and Beach Hire 4098 0072

Paddletrek Sea Kayaking 4098 0040

PK's Jungle Village 4098 0082

Rainforest Hide-away B&B 4098 0108

Rum Runner reef trips 4098 9249

Voyages H20 reef trips 4098 0033

# Managing Daintree Tourism

Management of the Daintree Coast's tourism industry is complex and often confusing because a range of organisations play a role. Below are some of main players...

## Douglas Shire Council

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The Daintree Coast is within the Douglas shire. The Douglas Shire Council (07-4099 9444) manages the ferry crossing and the road north to Cape Tribulation, including the strips of vegetation on either side of the road (the road reserve). The council is responsible for residential and commercial developments under its planning scheme. The council also maintains several visitor sites (eg. Thornton Beach) and plans a visitor centre on the south side of the ferry crossing in 2004. Under state legislation, local councils are responsible for developing and implementing pest management plans for feral animals and weeds in their shires.

## Wet Tropics Management Authority

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The Authority coordinates overall management of the Wet Tropics World Heritage Area, including a large area of the Daintree Coast. It includes many of the national park visitor sites, freehold land, council reserves and other types of land tenure. The Authority has managed and influenced tourism in a number of different ways:

- provides the legal framework for World Heritage management through the *Wet Tropics Plan 1998* and its zoning scheme which regulates tourism activities
- coordinated the \$23 million Daintree Rescue Program in the 1990s and produced the Daintree Futures Study in 2000
- develops major strategies which provide a blueprint for tourism development, such as the *Nature Based Tourism Strategy 2000* and *Walking Strategy 2001*
- together with the tourism industry, developed new World Heritage branding and frog logo to better market the World Heritage Area
- is developing a three-level accreditation scheme for tour guides to be introduced in 2005
- commissions tourism research and monitoring, mainly through its research partner, the Rainforest CRC.

## Qld Parks and Wildlife Service

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Many of the walks and visitor sites along the Daintree Coast are in the Daintree National Park and are managed by the Queensland Parks and Wildlife Service

(QPWS) based in Mossman (07-4098 2188) and Cape Tribulation (07-4098 0052). As well as looking after visitor sites, QPWS rangers manage issues such as weeds, feral animals and fire within the national park. QPWS is responsible for native wildlife, and are the first people to call if you see an injured cassowary. QPWS issues commercial activity permits for tour operators (Cairns 07-4046 6641 and Brisbane 1300 368 326). QPWS is also responsible for managing forest reserves, including the area around Roaring Meg Falls. Permits may be required for organised groups, camping and vehicle access in forest reserves (Cairns 07-4046 6608 or Atherton 07-4091 1844). The Great Barrier Reef Marine Park Authority has overall responsibility for the World Heritage listed reefs off the Daintree Coast. QPWS-Marine Parks is responsible for day-to-day management of the reef and coastal areas. This includes managing tourist programs and other activities on the Daintree River and coastline via the Marine Parks permitting system (07-4046 6600).

## The tourism industry

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The industry itself has a major responsibility in sustainably managing tourism - including tour company owners, individual guides and local residents. There are a number of groups which market the region, lobby the government and work with land managers on behalf of their members including:

Daintree Cape Tribulation Tourism Association  
07-4098 9118; 07-4098 9166

Port Douglas/Daintree Tourism Association  
07-4099 4588

Tourism Tropical North Queensland 07-40317676

## Further information

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Daintree Futures Study (research report no. 10)  
[www.rainforest-crc.jcu.edu.au](http://www.rainforest-crc.jcu.edu.au)

Wet Tropics Visitor Survey (research report no. 24)  
[www.rainforest-crc.jcu.edu.au](http://www.rainforest-crc.jcu.edu.au)

 Facts and Stats

 Flipbook

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# Trip Planning Map



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# Towards the River

*'It's not the destination,  
but the getting there that is important'*

*Robert Louis Stevenson*

Your visitors will have high expectations of a wilderness experience. Your aim is to bring these expectations to a realistic level before reaching their destination, the Daintree Coast. You've got about five minutes...

## History

George Elphinstone Dalrymple was commissioned by the Government to make exploratory forays into the area in 1873 to find a suitable port for the Palmer River Goldfields. Timber-getters and sugar cane growers began operations on both sides of the river in the 1880s. Sections of rainforest were progressively cleared from the lowlands to make way for sugar cane plantations. Today no cane is grown north of the Daintree River, but farms, orchards, roads, housing and visitors like us are as much a part of the Daintree Coast as the 'reef-meets-rainforest' image that is promoted widely by the tourism industry.

## Billabong Area

Floods associated with a cyclone in 1911 changed the flow of the Daintree River. After the floods receded, the river continued on its straight flood-carved alignment and never returned to its original meandering course. The bend is now a series of billabongs or ox-bow lakes, seen on the left just after the turnoff. A fierce fire lit accidentally in 1990 burnt through the billabongs, spreading flames up to the tops of the paperbark trees.

 Flipbook for Daintree River map.

The landholder who lives opposite tells of watching visitors foolishly wading into the shallow water to pick water-lily flowers. One cold August morning, after watching a 3m crocodile happily sunbaking across the small access road through the middle of the lagoons, he decided it was time for a crocodile sign to go in! Although the main road was frequently flooded before it was built up and sealed, the highest flood in the past 33 years was in 1996 when water ran waist-deep through the landholder's home.

## Safety & Comfort

⊕ There's a nasty bend in the road 0.5km from the turnoff that can ruin your reputation as a capable driver.

⊕ When spotting birdlife in the billabong drive slowly to give your visitors time to take in what you are

talking about. There is little opportunity to pull over safely or legally.

## Local Lore

There is an embankment on the lefthand side of the road before the public wharf. A local resident relates a yarn about seeing a crocodile from the window of his car. The crocodile was plodding along the embankment towards the river at about the same pace as his car was being towed along the flooded road!

## Derivations

**Quandong** *Elaeocarpus bancroftii* and *E. angustifolius*  
**Elaeocarpus** = Greek *elaia* means olive, *carpos* means fruit.

**bancroftii** = T.L. Bancroft (1860-1933) a Queensland physician and experimenter in biology.

**angustifolius** = narrow leaf.

## Paperbarks

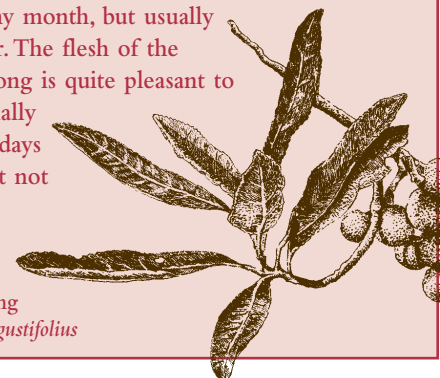
**Melaleuca** = Greek *melanos* means black and *leucos* means white. The first species described is said to have had white branches against a black (burnt) trunk.



## Plant Calendar

Flowers of the **Kuranda Quandong** *Elaeocarpus bancroftii* often carpet the road past the billabongs. This tree follows no regular flowering pattern and can flower at any time of the year. The more common **Blue Quandong** *Elaeocarpus angustifolius* is very conspicuous when the blue fruit is on the ground in any month, but usually in the winter. The flesh of the Blue Quandong is quite pleasant to nibble especially if left a few days to soften, but not the skin.

Blue Quandong  
*Elaeocarpus angustifolius*





# Nature Notes



These billabongs are sometimes visited by **Magpie Geese** - drive slowly - they may be perched in the trees.



**Cormorants** are often seen 'drip-drying' with wings spread out. Their plumage is permeable underwater and sheds air to reduce buoyancy. When out of water, plumage repels water, traps air and increases insulation.



**Darters** sink slowly in water until almost submerged, then stalk prey underwater as if it were an underwater heron. Darters have no underdown feathers, so sink into the water quite easily and are able to paddle about with only their long necks snaking above the surface. The trade-off for getting so thoroughly drenched is that they have to spend a good deal of time airing and sunning their plumage.



Although becoming less common due to the shrinking body of water, you may see the **Comb-crested Jacana** (also known as the Lily Trotter). Sometimes when alarmed or when returning to eggs or chicks, the bird can drain the blood from its comb turning it from red to yellow, thus seeming to disappear like magic.



During the wet season (Dec-Apr) the calls of male **White-lipped Tree Frogs** can be very loud. Males call to attract females and to repel other males. You may hear them on a cloudy day, especially near paperbark swamps. **Paperbarks** may occur as the dominant tree species in poorly-drained coastal lowland areas.



The **Pheasant Coucal** is easily seen in the spring and summer months skulking along tall grassy edges (sugar cane!) and other low cover. It will hop and fly off awkwardly, perching on fence posts and small trees. Try not to run over these birds as they hesitate across the road.



The Billabong is a haunt for many birds of prey which are often seen perched in the upper branches of the melaleucas. **Black or Fork-tailed Kites** are often seen hovering over cane fields especially after harvest, searching for carrion or animals such as the **Canefield Rat** *Rattus sordidus* and the **Grassland Melomys** *Melomys burtoni*. (Both these native rodents have flourished in the canefields to become serious economic pests. They gnaw the hard outer rind of the cane and expose the sap to bacteria which reduces the sugar content).

## White-lipped Tree Frog *Litoria infrafrenata*

*Litoria* = *litoralis*, of the shore.

*infrafrenata* = *infra* means underneath, below and *fren* means bridle or bit, the white line on the bottom lip.

## Have you been asked ...

### *Where is the rainforest?*

**A:** Apart from a narrow strip of vegetation along the Daintree River, the rainforest in this area has largely been overcome by 'people pressure' through a combination of clearing for timber, cane, cattle and settlement. Looking northwards across the Daintree River are the rainforested slopes of Thornton Peak, part of the Daintree National Park and the Wet Tropics World Heritage Area.

### *What's the difference between 'The Daintree' and Daintree Village?*

**A:** The Daintree Village is about 12 km past the turnoff to the ferry and has an interesting history going back to early pioneer days. Residents of the Village can become understandably upset when visitors do not realise that the Village is a separate entity within the larger area generally known as 'the Daintree'.

## Further Information

Birds are one of the features of the day. Accurate field identification comes with experience. Carry binoculars and have a field guide handy. Your visitors will enjoy identifying species while you keep your attention to the road.

📖 Bibliography & Reading List

# Daintree River

*'...the animals which have survived the greatest catastrophes the world has seen... have every right to survive the impact of a small bipedal mammal which prides itself on being the only species ever to have evolved a conscience.'*

*Malcolm Penny 'Alligators and Crocodiles'*

The river area is a significant cultural landscape to its traditional owners, the Kuku Yalanji. It is a complex relationship of important sites, place names, camp sites, walking tracks and resource zones.

## History

George Dalrymple named the river after Richard Daintree in 1873 while exploring the coast from Cardwell to Cooktown. At the time mining was considered important in the development of Queensland, so names chosen were often those of men prominently associated with mining. Richard Daintree (1831-1878) came to Australia on medical advice that the drier climate would improve his lung condition. He became Government Geologist for north Queensland and discovered three payable goldfields. He was also an excellent photographer and much of what we know about early mining in Queensland is due to his portraits. Although he was the first trained geologist to venture into north Queensland, by the time the river was named he had returned to London and he never saw the area which bears his name. Dalrymple described it as 'the finest river scenery in the colony'.

'Red gold' is what the timber cutters called *Toona ciliata* the towering Red Cedar, with trunks as wide as 3m (probably wider than your vehicle). It was an easy way to get rich in the early 1800s. The timber was red and soft and worth a penny ha'penny a foot back then. They started cutting Red Cedar trees out of the rainforests near Sydney in the 1790s, shipping them off to England and India to be used for buildings and fine furniture. As the southern forests were cleared, the timber cutters pushed further and further north and by the 1870s loggers had reached the Daintree River. Only 20 years later most of the Red Cedar was gone and the race for red gold was over. Red Cedar trees can still be seen in the rainforests, but the giants are gone - antique red cedar furniture is a lot easier to find and fetches a handsome price!

## Safety & Comfort

⊕ 'Comfort stops' are sometimes needed in a hurry, especially if you have small children on board. There are public toilets near the ferry crossing with new facilities planned for 2004.

⊕ Take note of the crocodile sign. Make sure parents are aware of the dangers of letting children near the water's edge. As local songwriter Johnno Johnson croons 'if you make like a meal, he'll be in like a shot'.

## Have you been asked ...

*How do cyclones affect the Daintree Coast?*

**A:** Cyclone Rona crossed the Daintree Coast late in the evening on 11th February 1999, reaching winds of up to 200km/hr. On the whole, the area shouldered the impact of cyclonic conditions remarkably well, although in some places visitors will be saddened to see trees uprooted and vegetation stripped. Remind them that cyclones are a natural phenomena and an inherent feature of life in Tropical North Queensland.

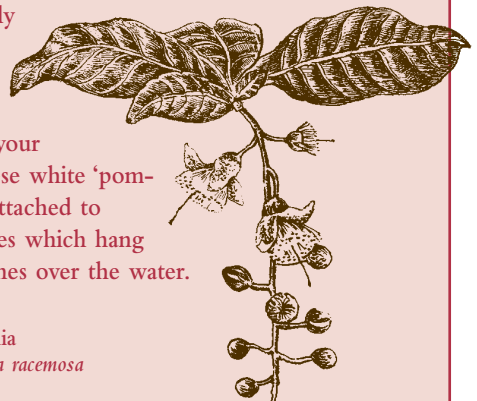
📖 'After the Storm' (Dubuji Visitor Area)



## Plant Calendar

On still winter mornings the soft 'plop' sound of *Barringtonia* *Barringtonia racemosa* blossoms falling gently

into the water brings you back from your reverie. These white 'pom-poms' are attached to long racemes which hang from branches over the water.



*Barringtonia*  
*Barringtonia racemosa*

# Nature Notes



Surveys in 2000 and 2001 by the Queensland Department of Primary Industries found over 40 species of fish in the Daintree River. Among the most widespread were Glassfish, Silver Biddies, Pony Fish and Pacific Blue-eyes.

Three species of **mudskippers**, including the seldom seen **Giant Mudskipper** have also been recorded. Local anglers report regular catches of **Mangrove Jack, Javelin** and **Trevally**, with **catfish** being extremely common.

However, **Barramundi** appear to be increasingly difficult to catch. Queensland introduced a closed season from November 1 to February 1 to protect spawning Barramundi (except in artificially stocked Lake Tinaroo where the fish have no access to brackish water to breed).



## Flipbook for Common Fish, Mudskipper



The black form of the **Common Tree Snake** *Dendrelaphis punctulatus* is often spotted lying across vegetation to catch early morning winter sun. One cruise operator describes them to his visitors as looking like a discarded fan belt. This beautiful little snake is usually black on top and bright yellow underneath, and is quite harmless.



Lee Lafferty, who has lived and worked on the river for many years, watched **Black-necked Storks (Jabirus)** nesting on Double Island for many years. In 2000 their nesting tree, a Milky Pine *Alstonia scholaris*, was hit by lightning and the birds moved on to nest elsewhere. They still frequent the river and with binoculars it is possible to see that females have golden eyes, whilst the male's eyes are darker. Female birds are usually larger. Also known as Lindsay Dick Island, Double Island was originally in two pieces, but with continued growth of the mangroves it has now become one island with a creek running into a lagoon in the centre. Double Island is also a croc nesting site.



Lee also reports having seen **Bennett's Tree-kangaroos** feeding on Looking Glass Mangrove *Heritiera littoralis* leaves on the section of river near Virgil Island and further downstream.



## What Makes the Daintree Coast Special?



Both **Spectacled** and **Little Red Flying-foxes** are regularly seen in trees along the river and its tributaries. Occasionally **Black Flying-foxes** can be seen amongst colonies of Spectacled Flying-foxes and they sometimes interbreed.



## Glimpses of Wet Tropics Wildlife



Because of its habit of freezing rather than flying off when disturbed, the **Papuan Frogmouth** can often be watched on branches or stumps along the river's edge. With its feathers compacted and eyes closed to slits it could easily be mistaken for a piece of gnarled bark. Frogmouths are not members of the owl family. Their small feet are quite weak and adapted for perching, not capturing prey. Instead they snatch up nocturnal insects and spiders with their huge mouths.



One of the characteristic sounds of the Daintree River is the call of **Yellow Orioles**. The cheerful, bubbly calls echo over the water all year as they feed on fruiting trees in nearby forest. On bright sunny mornings they can be seen fluffing up their feathers as they bathe in dewy leaves, then singing contentedly in the sun. Yellow Orioles feed on ripe figs, quandongs and the fruit of the **Ylang-ylang** *Cananga odorata*.



Sometimes seen flying low from branch to branch and diving into the water to catch fish is the **Azure Kingfisher**. It has a deep blue head, back and wings with completely orange underparts.



The **Great-billed Heron** is rarely spotted but has been seen near the ferry and near Daintree Village in the past. If you have bird enthusiasts on board, seeing this bird will be one of the highlights of their day. The heron's call has been described as the barking of a big dog wearing a muzzle.





# Facts & Stats

## CROCODILES

☒ Australia has two species, both 'true' crocodiles. Despite their names both estuarine (saltwater) and freshwater crocodiles can live in fresh and salty water, but 'freshies' tolerate only brackish (slightly salty) water.

☒ **Estuarine crocodiles** *Crocodylus porosus*, occupy tidal and non-tidal rivers, swamps and billabongs in the north of Australia between Broome in Western Australia and Rockhampton in Queensland. Their range can extend quite some distance inland; they have been found about 68 river kilometres up the Daintree River.

☒ *Crocodylus porosus* often makes quite extensive ocean voyages and has been reported halfway between Indonesia and Australia.

☒ Freshwater crocodiles do not occur naturally on the east coast of Queensland south of Princess Charlotte Bay.

☒ Estuarine crocodiles have been protected in Queensland since 1974. Once hunted almost to extinction, crocodiles are now commercially farmed for their meat and hides.

☒ In wintry weather, these reptiles climb ashore more frequently and stay out longer to bask in the sun. They usually re-enter the water after dark because during the night the water is warmer than the air.

☒ Although normally referred to as 'cold-blooded', a better description might be 'solar-heated'. The scutes, or bumps, on a crocodile's back act as solar panels – the wearers often bask at right angles to the sun to gain maximum energy.

☒ A crocodile's head, being smaller than its body, heats up more quickly during basking. Because a croc has a waterproof skin, it cannot sweat as humans do, so to avoid over-heating, it 'gapes' or holds its mouth open, letting cooling air flow over the only thin skin it has – the inside of its mouth!

☒ Body temperature also dictates the quantity of food consumed. As with most reptiles, without enough heat, a crocodile will not eat, or will regurgitate food rather than let it rot in its belly. Humans convert about 80 percent of food consumed to produce heat with only three to four percent producing flesh and energy, whereas crocodiles convert 22-70 percent of food to flesh and energy.

☒ The 'normal' maximum size for male estuarine crocs is 4.6m – 5.2m and 3.1m – 3.4m for females.

☒ It is thought that crocodilians have been around for 240 million years. The largest ancient crocodilian, known from 70 million-year-old fossils, lived in North America. Its lower jaw was 2m long, its body length was about 15m and it weighed a little over six tonnes.

☒ *Crocodylus porosus* mating occurs in the water four to six weeks before egg laying, which usually begins with the onset of the wet season.

☒ A female is not mature until 12 years of age.

☒ Nests are constructed of grass and soil raked with the legs into a mound about a metre high, situated to avoid minor floods and usually within 10m of the water.

☒ Each clutch averages 50 eggs about the size of a goose egg, requiring humidity of over 95 percent for embryo development. Sex is determined by nest temperature, with 32 deg. producing over 80 percent male hatchlings and higher or lower temperatures resulting in more females.

☒ Temperature is maintained by rotting vegetation in the nest. Contrary to popular folklore, females don't adjust the nest material or urinate on the nest! Nor do they take an active part in incubation, which takes about 90 days. However, they are very protective of their nests.

☒ The greatest danger to eggs is flooding, which destroys 30-50 percent of all nests because embryos 'breathe' through the shell and die if the nests are flooded.

☒ The female stays around her nest and digs out the babies when their chirping indicates they are ready to hatch. Adults may even roll the eggs in their mouth to help them open. The hatchlings are gently carried in the mother's jaws to water where they stay close to her for a period of time (from a matter of hours to up to two weeks depending on tidal conditions, river current and wind) before beginning to disperse.

☒ It is estimated that out of 500 eggs, only two or three will become adult crocs. Birds of prey, some fish, Long-necked Turtles, other crocodiles and humans can all be predators at some time in a croc's life!

☒ Estimating the number of crocodiles in a river system is difficult. The last informal survey showed there were 16 non-hatchling estuarine crocodiles sighted on a 21.2 kilometre stretch of the Daintree River and suggests that more occurred downstream rather than upstream of the ferry.

☒ Human fatalities are rare. In Australia there have only been 28 human fatalities associated with crocodiles in 130 years (1867-1997). The last recorded fatality in the Daintree area occurred on December 21, 1985.

☒ Nearly all crocodile attacks known have been associated with alcohol consumption and entering water around ramps or in mangroves at night.

## Have you been asked ...

### What is meant by 'the Daintree'?

**A:** There is a popular misconception that 'the Daintree' is the Wet Tropics World Heritage Area. 'The Daintree' is a loose term for the coastal lowland area between the Daintree and Bloomfield Rivers, in this Handbook referred to as the 'Daintree Coast'. It is just one part of the 900,000 hectare World Heritage Area. The term 'Greater Daintree' covers the area from the Annan River, south to the Mossman River and Carbine Tablelands and west to the Mt Windsor Tablelands. Just to confuse matters there is also Daintree National Park (stretching from Mossman Gorge to Bloomfield River) and Daintree Village, about 12km upstream from the ferry crossing on the southern bank of the Daintree River. And no, there is no such thing as a 'Dane Tree'. In 1873 explorer George Elphinstone Dalrymple named the river in honour of his old boss Richard Daintree, who was once government geologist for north Queensland.

## Derivations

### Milky Pine *Alstonia scholaris*

*Alstonia* = Dr Charles Alston, Professor of Medicine and Botany, University of Edinburgh.

*scholaris* = scholar, schools, the wood was used for school boards and rulers in Burma.

### Ylang-ylang also Perfume Tree *Cananga odorata*

*Cananga* = probably a Malay name.

*odorata* = Latin, fragrant.

### Common Tree Snake *Dendrelaphis punctulatus*

*Dendrelaphis* = *dendron*, tree.

*punctulatus* = puncture, point.

## Further Information


Read *Crocodiles of Australia* by Grahame Webb and Charlie Manolis.


Read *Fish Resource and Stream Habitat of the Daintree, Saltwater, Mossman and Mowbray Catchments* by J. Russell, A. McDougall, S. Kistle (DPI-Fisheries) 1998

 Flipbook map of Daintree River

# Facts & Stats


## DAINTREE RIVER


 The Daintree River is 120km long. Distance from the ferry crossing to the river mouth is 7km as the crow flies or 9.5km as the crocodile swims. Distance from Cairns to the ferry is 104km by road.

 Early timber-cutters would drag logs down to the river with bullock teams, then float the logs out to the river mouth chained together in rafts, to be loaded on to ships heading for Cairns.

 The **Daintree River Ringtail Possum** is not found along the Daintree River, except in its uppermost reaches in the cool, wet upland rainforests of the Mt Carbine and Mt Windsor Tablelands.

### What Makes the Daintree Coast Special?

 Most flooding in the Daintree River occurs as a result of massive rainfall in the catchment area or from rain that is brought in from the sea by cyclones. Oldtimers tell of big floods in 1939, 1945, 1957, 1979 and 1996 and claim that the worst cyclone ever to hit the river was in 1934. The cyclone crossed the coast just north of Port Douglas, causing a massive storm surge in the river and nearby coastal areas (where a 4.8m tidal wave was reported), snapping off and uprooting rainforest trees 'four feet thick'.

 During major flooding a combination of freshwater, winds and continual swells can cause reef stress resulting in coral bleaching. Sediments blanket the reef and inhibit the corals' ability to produce food from sunlight. This problem is exacerbated by inappropriate land-based practices which cause soil to wash downstream into the ocean.

### A Flood Story

During the March 1996 flood, Daintree River tour operator Dean Clapp recorded 2000mm of rain in three days. The water came up to the gutters of the Big Croc Cafe (which operated beside the ferry crossing until 2000). Dean followed the tops of road signs in his boat to check on the cafe as it went under - all the usual landmarks had disappeared.

On the first day as the river was still rising, a helpful ferry worker waded through thigh-deep water in the cafe and nearly 'walked on water' getting back into his dinghy when he realised that two of the fridges were still going!

When the flood went down two freezers were found hanging in the mangroves, most doors were washed out, all the internal chipboard walls had to be replaced, the floor had to be re-sanded and wiring replaced. The whole place stank of mud and was not insured because of the location!



# The Ferry

The ferry is the gateway to the Daintree Coast. This is an opportunity to ease your passengers into an eco-conscious frame of mind as they contemplate the next stage of their journey.

## History

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The first ferry was a wooden punt built to transport trucks carrying trees cut from the northern bank of the Daintree River. Apparently it had major design problems and didn't last long. Around 1954 it was replaced by a steel punt built from ex-Army pontoons and driven by an outboard to service the sawmill on the north bank, owned by George Quaid and his son George Jnr, who were cutting timber between the ferry and Bailey's Creek. By 1958, in response to increasing pressure for use of the ferry, the Douglas Shire Council contracted Cairns engineering firm Maxwell & Morrow to build a new ferry and the Quaid ferry was moved upstream near Virgil Island. Originally the ferry only operated on week days to 5pm and closed an hour for lunch.

## Safety and Comfort

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The ferry operates from 6 am to midnight every day except Christmas Day. The river is 270 metres wide at the crossing and the ferry averages more than 100 crossings a day, travelling over 10,000 km each year along the wire rope.

The crew has a huge responsibility for the safety of hundreds of thousands of people every year, so please demonstrate patience and common sense at all times and respect their advice and directions:

- ⊕ People must remain in their vehicles at all times.
- ⊕ Drivers and pedestrians are required by law to follow the instructions given by the Traffic Controller. Failure to comply will be dealt with by the police. Remember you are a passenger on a commercial ship. The Master of the vessel has absolute authority under maritime law. This responsibility includes loading and unloading. The Master also has the right to refuse passage to any person at any time.
- ⊕ If there is a fuel delivery vehicle in front of you, relax and prepare your guests for a wait, as regulations will not allow other vehicles on the ferry at the same time.
- ⊕ The ferry operator can be contacted by phoning (0438) 987 536. For after hours emergencies phone (07) 4098 7536.

## Local Landmarks

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When looking north from the ferry the small 'bite' which can be seen against the skyline of the ridge, marks the end of a track which was bulldozed to the crest of the range from the other side in the mid 1980s as a possible powerline route. Flat Peak is very noticeable to the right.

## Ferry Stories

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The Council ferry of 1958 had only one ramp which required the ferry to turn around on each trip to let vehicles off. Without a cable and at the mercy of the tide, turning around for each landing was often a time consuming exercise. One of the early operators was known to keep people waiting for up to an hour. He would manually crank up the ramp, take off and steer a course for the opposite bank. The ferry could drift with the tide for ten minutes while he finished cranking the ramp. And, as if that didn't take long enough, he would sometimes turn back to pick up some more passengers to save cranking the ramp again!

When the ferry operated between 6am and 6pm only, long queues would often form on the northern bank, with people wanting to catch the last ferry home. One busy New Year's Day, on a ferry which took only six vehicles per trip, the driver of one vehicle thought he'd make some more room on the ferry by driving onto the ramp for the journey across. The weight of the vehicle pulled the steelwork out of the ferry and the car slid over the edge, wedging itself into the mud, standing straight up on its nose with its lights still on! The operator was forced to drive the ferry over the car to get to the other side for help, but could not land on the southern bank because the ferry ramp had collapsed. Eventually, a crane and loader working on the northern side were enlisted to lift the ramp up for landing, but the ferry had to run over the car again to collect the machinery. The same operator tells of an incident when a frantic driver drove up on to the ramp before it had been lowered. The car wobbled on the edge, then crashed onto the concrete landing and sped off onto the northern bank without stopping. At that time the road was one-way only, so the ferry operator waited until the driver returned a few days later.

# Nature Notes



**Welcome Swallows** (they have a deeply forked tail, shiny blue-black back and wings and tan chin) use the ferry's loading ramp as a hunting base. They make low swooping flights over the water, catching insects as the ferry travels back and forth. Although they often feed their babies on the ramps, they don't appear to nest on the ferry itself.



Some evenings **small bats** swoop over the water, not only catching insects but also drinking the brackish water. A much larger species, the **Spectacled Flying-fox**, is also known to sip saline water on hot evenings.



## Glimpses of Wet Tropics Wildlife



**Yellow-bellied Sunbirds** can often be seen looking for nectar and insects amongst the yellow flowers of Cottonwood *Hibiscus tiliaceus*, which grow along the riverbank. These tiny birds sometimes remind overseas visitors of hummingbirds. The ferry is sometimes used as a site for their nests. Nests have a long spindle shape with a hooded entrance and are made of bark, plant fibre, dead leaves, grass, cobwebs, cocoons and strings of caterpillar droppings. The nest is built by



Yellow-bellied Sunbirds *Nectarinia jugularis*

the female with lots of encouragement from the male. **Black Butcherbirds** are major predators of newly hatched chicks.



Wading birds such as **herons** and **egrets** fish along the shallow waters at the river's edge. They cleverly keep their bodies very still while doing a 'soft-shoe shuffle' with their long legs, in the hope of disturbing small fish in the muddy shallows.



While waiting for the return ferry on the north side of the river have a look at the **Ant-plants** *Myrmecodia beccarii*. There are some growing on the paperbarks where the banana vendor sets up his stall. Ant plants have short bulb-like stems perforated with small natural holes which lead to tunnels, some smooth and some rough, which make a perfect home for ants of the species *Iridomyrmex cordatus*. The ants usually choose to live in the smooth tunnels and store their rubbish in the rough-walled tunnels. The Ant plant benefits because the rough-walled tunnels act like an intestine for the plant, absorbing valuable nutrients from the ants' waste (radio-isotopes fed to the ants as an experiment were later absorbed by the plants).

The chastised driver, by this time in a much quieter mood, not only apologised profusely, but tried to give the operator a bag of dried leaves as a peace offering. The operator says it's just as well he doesn't smoke!

## Have you been asked ...

### *Who runs the ferry?*

**A:** Every five years the Douglas Shire Council calls new tenders and the successful tenderer provides the ferry. Daintree Ferry Pty Ltd has the current contract (2001-2006) and operates a 21-vehicle ferry. The fees pay for the ferry service, operations and management and part of the fee is now used for conservation and infrastructure north of the Daintree River. Residents and ratepayers receive a concession if they buy an ID card or a booklet of tickets.

# Mangroves

*'We found several bogs and swamps of salt water, upon which grows the true mangrove, such as is found in the West Indies ... In the branches of these mangroves there were many nests of a remarkable kind of ant, that was as green as grass; when the branches were disturbed they came out in great numbers, and punished the offender by a much sharper bite than ever we had felt from the same kind of animal before.'*

*Log of the 'Endeavour', May 1770*

Most tours offer a cruise along the Daintree River or Cooper Creek and the guide on board will cover this topic thoroughly - you hope! Why not take a cruise to find out what information you can add on your own tour, without sounding repetitive.

## History

Worldwide, vast tracts of mangroves have been destroyed, so we are lucky to have relatively large areas of Australia's tallest and best-developed mangroves still existing on our doorstep. Mangroves originated in South East Asia around 70 million years ago and today reach their greatest luxuriance and diversity on the west coast of the Malay Peninsula. Mangroves probably entered Australia and dispersed around it during a time of lowered sea levels when a land bridge was created between Australia and regions to the north. The Daintree River has 26 mangrove species of Australia's 39 species. Worldwide there are 62 recognised species with a further 11 hybrids.

The origin of the word 'mangrove' is obscure, possibly arising as a combination of the Portuguese 'mangue' meaning an individual mangrove tree, with the English 'grove'. The word could be from the now disused Malay words for mangrove, 'manggi-manggi' and 'mangin'.

The Cannonball Mangrove belongs to the same family as the famous Red Cedar (Meliaceae family) and its timber resembles the highly prized cedar timber. Consequently Cannonball Mangroves were heavily cut in early days for cabinet-making and wood turning.

## General Notes

- ☞ Mangroves live between the sea and the land. A mangrove is not a single species, but the name given to a community of unrelated plants living in areas which are inundated by tides.
- ☞ Many people don't like mangroves initially. At first glance all they see is a muddy swamp inhabited by mosquitos, midges and crocodiles. However, once people realise how important they are as breeding

and nursery areas for marine life, they begin looking at these swamp-adapted trees with their intricate root systems through different eyes!

- ☞ It is estimated that 75 percent of fish caught commercially spend some time in the mangroves or are dependent on food chains which can be traced back to these coastal forests. Queensland's commercial seafood industry is the fifth largest primary industry in the State, and is worth around \$440 million a year.
- ☞ Mangroves are also a nursery for Banana and Leader Prawns and mud crabs.
- ☞ Mangroves help protect the Great Barrier Reef from human impact by trapping sediments and absorbing pollution, including heavy metals.

## Derivations

**Cannonball Mangrove** *Xylocarpus granatum*

*Xylocarpus* = *xylo*, wood + *carpo*, fruit.

*Rhizophora* = root bearing

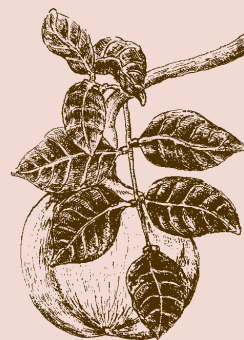
*Cerlops* = horn-like



## Plant Calendar

**The Cedar Mangrove** *Xylocarpus moluccensis* is notably deciduous, losing its foliage in the cooler months. So is the **Milky Mangrove** *Excoecaria agallocha*.

Cedar Mangrove  
*Xylocarpus moluccensis*





## Have you been asked ...

### *What is the horrible smell in mangroves?*

**A:** Organic material from the trees such as dead leaves mix with salts in the seawater, clump together then fall to the bottom. They mix with other sediments and form a fine, sticky mud. The mud particles are so fine that hardly any air can penetrate. The organic matter trapped in the mud keeps decomposing and forming gases. It is small amounts of sulphur-based gases which produce the 'rotten egg' smell.

## Safety & Comfort

✚ **Midges** and **mosquitoes** can be particularly annoying in mangroves but fortunately most visitors view mangroves from a moving boat. If your tour includes a mangrove walk, the tour desk or brochure should advise visitors to wear or bring long pants and long-sleeved tops (light-weight overalls are excellent).

Some visitors may be allergic to midge bites. An early warning could help them avoid the discomfort of scratching bites for the rest of the day!

If handing out insect repellent, consider eco-friendly repellents which are available from most supermarkets, or you make your own from baby oil with a dash of citronella and Dettol.

## Further Information

*Mangroves of Australia* by R. Lear, T. Turner is now a rare book but libraries may have it. The pocket-sized *Field Guide to the Mangroves of Queensland* by C. Lovelock and S. Clark can get your group identifying mangroves. *Tropical Topics* Nos. 19 and 21, April/July 1994 provide a comprehensive background on mangroves in the Wet Tropics.

# Nature Notes



**Fiddler crabs** are small, colourful crabs found in mangrove forests. They are easily disturbed - the shadows of birds overhead will often trigger retreat by a whole community, your shadow having the same effect. Only by sitting quietly can the fascinating social behaviour and vivid colours be appreciated. Each fiddler crab species has developed a distinct claw wave, the purpose of which is still debated by experts. Claw loss due to fighting is infrequent as fighting is a highly ritualistic process which rarely leads to physical contact - a bit like crab tai-chi. Fiddler crabs are the prime reason that the mangrove forest floor is litter-free. They drag the leaves into their burrows to eat them as they rot.

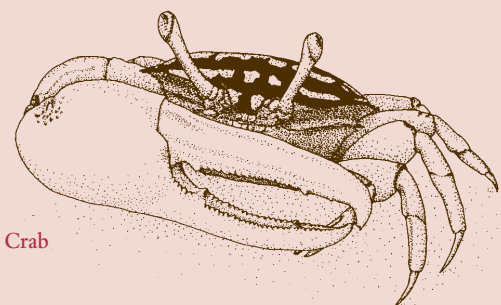
A characteristic noise of the mangroves is a loud crack or pop produced by the rarely seen **Pistol Shrimp** which inhabits the more fluid soils in wetter parts of the mangroves. The sound is produced by the animal snapping its enlarged claw which contains a unique peg and socket arrangement. It is thought to be a territorial signal and/or a noise made to deter predators.

Vivipary, the production of live seedlings (or live births), is very rare in plants. **Rhizophora**, **Bruguiera** and **Ceriops** species have this intriguing method of reproducing themselves. The fertilised seeds do not drop from the plants but grow out from the base of the fruits to form long, spear-shaped stems and roots. They may stay attached to the parent tree for one to three years, reaching lengths up to one metre before breaking off from the fruit and falling into the water.

The well-developed seedling may have a greater chance of surviving once it has taken root.

**Mangrove roots** come in five different above-ground root formations:

- **Pneumatophores** are peg-like erect roots growing upwards from cable roots below the surface. They are also known as peg, pencil or snorkel roots. (e.g. Grey Mangrove *Avicennia marina*)
- **Stilt roots** are the distinctive curving prop roots which arch out from the trunk (e.g. Red, Stilt or Spider Mangrove *Rhizophora stylosa*)
- **Buttress roots** are blade-like flattened structures at the base of the trunk (e.g. Cannonball Mangrove *Xylocarpus granatum*)
- **Knee roots** are cable roots which have grown above the surface of the mud and then down into it again (e.g. Orange Mangrove *Bruguiera gymnorhiza*)
- **Aerial roots** descend from the branches but do not enter the mud (e.g. Red Mangrove)



Fiddler Crab



# Facts & Stats

## ANIMALS

☒ A teaspoon of mud from a north Queensland mangrove swamp contains more than 10 million bacteria. Such numbers are among the highest to be measured in swamp mud anywhere in the world.

☒ Mangrove plants produce about 1kg of litter per square metre per year. Partly decomposed leaf particles, loaded with colonies of protein-rich micro-organisms, are eaten by fish and prawns.

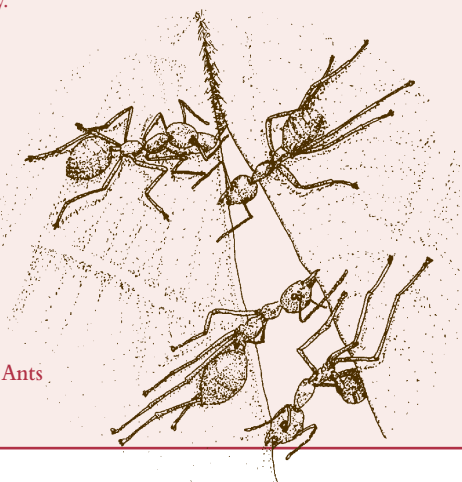
☒ Crab burrows play an important role in the mangroves, aerating, draining and turning the dense waterlogged soil - a direct benefit to the plants which in turn give them shelter and food.

☒ Most crabs are nocturnal, appearing at night on a rising tide but remaining in their burrows by day to avoid predatory birds. Fiddler crabs are an exception.

☒ A common resident in the mangroves is the **Shining Flycatcher**, easily identified as a glossy blue-black male usually accompanied by a rust-red and white female. The Shining Flycatcher has a croaking call as well as several whistles and a lovely trill.

☒ In the Daintree lowlands, mangroves and swamps are important refuge areas and movement corridors for sub-adult and juvenile cassowaries.

☒ **Green Tree Ants** *Oecophylla smaragdina* build their nests from leaves. Working as a team they bridge the gap between leaves, sometimes forming ant-chains. They draw the edges of the leaves together and then using their own larvae as 'glue-sticks', join the leaves with silk produced by the grubs. The ants benefit by having a home but the tree also benefits because its branches and leaves are swarming with aggressive defenders ready to attack most leaf-eaters which approach their home. For those brave enough to try them, the wonderful, sour lemondrop taste of green ants is almost pure formic acid. Why the ants contain so much formic acid (almost a third of their body weight) is a mystery.



Green Tree Ants

## PLANTS

☒ Mangroves protect the coast by absorbing the energy of storm-driven waves and wind. The only two yachts undamaged by Cyclone Tracy in 1974 had sheltered in a mangrove creek.

☒ Mangrove trees have developed above-ground breathing roots which take in oxygen through special pores called lenticels which close when the roots are flooded. The air is then passed to the underground roots through specialised spongy tissue.

☒ Mangrove roots are shallow but so extensive that the root system of each tree outweighs the trunk and crown.

☒ Mangroves do not actually need salt. Some species will grow without saltwater (even in a pot at home), but the best growth occurs where the plants live in sea water diluted by about 50 percent fresh water.

☒ All species stop much of the salt by filtering it out at root level. Most exclude at least 80 percent.

☒ Some such as **Eucalypt Mangrove** *Avicennia marina* subsp. *eucalyptifolia*, **Pornupan Mangrove** *Sonneratia alba* and **Holly-leaf Mangrove** *Acanthus ilicifolius*, excrete salt through leaves with special salt-secreting glands.

☒ A third method of coping with salt is to concentrate it in bark or in older leaves which carry it with them when they drop. **Black Mangrove** *Lumnitzera littorea*, **Eucalypt Mangrove**, **Yellow Mangrove** *Ceriops tagal* and **Pornupan Mangrove** all use this process.

☒ Many mangroves use more than one method to cope with salt.

☒ Features which help conserve water are also important and include a thick waxy skin on the leaf (called a cuticle) or dense hairs to reduce the loss of water.

☒ Different mangroves have different salt tolerances resulting in consistent patterns.

### 🌿 Flipbook for mangrove transect

☒ Most evaporation occurs through pores in the leaves (called stomata) so these are often indented below the leaf surface where they are protected from drying winds.

☒ The bark of many species has been used for tanning skins and dyeing fabrics.

# Approaching the World Heritage Area

## *Ferry to Alexandra Range*

Now is the time to show your visitors the Flipbook maps and point out the boundary of the Daintree National Park as it winds around extensive subdivisions.

### Getting the story right about private and public land

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The Daintree Coast stretches from the river we have just crossed to Cape Tribulation, about 40 km by road. About 17,000 hectares of land between Daintree River and Cape Tribulation is protected as Daintree National Park. The park was first gazetted in 1981 as Cape Tribulation National Park, and went through several expansions before it was combined with Mossman Gorge into a larger Daintree National Park in 1995. It is bordered on the western side by an extensive Timber Reserve which stretches over Thornton Range and beyond. In 1988 the National Park, Timber Reserve, other public lands and some privately owned land was declared part of the 900,000 hectare Wet Tropics World Heritage Area.

Don't be tempted to describe the Daintree Coast as one big protected area. A sizeable portion of the lowlands you will be travelling through is privately owned freehold land. You will only travel through two sections of national park between the ferry and Cape Tribulation. There are about 1000 rateable blocks, the majority between 1-2 hectares. The number of permanent residents is the subject of some debate - estimates range from 600 to 900 people.

World Heritage listing protects national park and forestry land, but the protection rarely extends to rainforest which has been subdivided and sold. Only about 20 privately owned blocks are included in the Daintree Coast section of the World Heritage Area. Although the land outside the World Heritage Area is extensively subdivided, much of the rainforest is still intact because owners haven't settled on their blocks. This intact rainforest continues to harbour extremely rare plants, the Cassowary, Bennett's Tree-kangaroo and other intriguing creatures.

### Daintree Rescue Program

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The \$23 million Daintree Rescue Program was introduced in the mid-1990s as a cooperative effort by all three tiers of government (Local, State and Federal). Staged over several years, it had three main components:

- Buying 83 properties with a total area of 1640 hectares at a cost of \$14.3 million.
- Entering into cooperative management agreements (CMAs) with landholders who wished to ensure permanent protection of rainforest on their land.
- A capital works program for public facilities such as picnic areas, carparks, information displays and walking tracks. You will be visiting some of these sites.

### More Daintree Buyback

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Following the Daintree Rescue Program, there were still about 700 vacant freehold blocks, many of which are for sale. In July 2003, the Douglas Shire Council introduced a \$4 "conservation and infrastructure management fee" for each vehicle which crosses the Daintree River. Seventy-five per cent of the funds collected are spent on the acquisition of property for conservation purposes, associated activities (such as conservation agreements, vegetation controls, weed management) and education services. The remaining 25 per cent is for infrastructure. The Council receives advice from a committee made up of tourism, community, indigenous and conservation interests.

There are also several not-for-profit foundations focussing on Daintree land purchase, revegetation and covenants that protect land. They include the Daintree Rainforest Foundation, the Australian Rainforest Foundation and the Austrop Foundation. The Council has also introduced a rate rebate program to assist land owners undertaking conservation activities.

📖 'The Ferry'

## The Power Debate

If your visitors have heard about the ongoing debate over whether mains power should be provided to the Daintree Coast they will probably ask you about it. Like any issue, there are two sides to the story. It will help to provide both sides so your passengers can make up their own minds. As of January 2004 only a few properties in the Forest Creek area (upriver from the ferry on the north side of the river) have a reticulated power supply. All other residents use a mix of solar, hydro and generators to power their homes and businesses. Many residents settled here with the understanding that mains power would be connected, and dislike having to rely on alternative energy sources. However, conservation groups and some sectors of the tourism industry believe if mains power is connected, development will forge ahead. Development approvals and commercial zonings on the undeveloped blocks have the potential to create a town the size of Mossman. This could increase pressure on the environment and detract from the ambience which currently attracts visitors.

## Driving from the ferry to Alexandra Range

Grazing land seen along the road was cleared long before it was dreamed that the beauty of untouched rainforest could ever compete with cattle for an income!

As you begin climbing the range and enter the rainforest remember this may be a first for some of your visitors. You may be able to keep the commentary to a minimum and let the rainforest speak for you. Depending on the weather, you may be able to open the windows so your visitors can hear the birds and smell the forest.

A banana and taro plantation on Cape Kimberley Road can be glimpsed from the range on the return journey.

Landslides occur during heavy rain, usually in the wet season when 75-90 percent of rain falls. The landslide 0.7km from the Cape Kimberley turnoff will probably continue to slip in future wet seasons because the 'angle of repose' is too acute. However, to reduce it to an angle of 45 deg., which would probably avoid future slips, would require clearing a further large area of forest.

Responsibility for the first 16km of the Cape Tribulation Road was transferred from the Department of Main Roads to the Douglas Shire Council in 1992 at Council's request, to keep the road narrow and so retain more of the forest canopy. The remaining 24km was already an undeclared road under Council's jurisdiction. Upgrading and sealing commenced in 1993 with a joint funding package from State and Federal Governments. By 2001 the entire road to Cape Tribulation was sealed.

Several sections of road have traffic calming devices to slow down vehicles in areas frequented by cassowaries. The most infamous are the speed bumps on the approach to Noah Creek, where a cassowary road sign provides a graphic reminder of why the speed bumps were introduced.

Some sections of the road have been constructed with an experimental material called BTB (Bitumen Treated Base) which mixes a binder with the road base before it is laid, resulting in a pavement as strong as concrete and impervious to water, but more flexible than normal road surfacing. On some particularly wet sections of the road such as Alexandra Range, this material has enabled Council engineers to create efficient drainage by sloping the road into guttering made of similar material. Standard road design would have required a centre crown falling away to a table drain on either side of the road.

This new method allows for a narrower road which retains the canopy while future repair work can be laid on top of the old surface without digging it up. Performance of this new product is being monitored by the producer, Pioneer Road Services, who are currently tendering for road-making projects in other 'wet spots' in Indonesia and Malaysia.



## Plant Calendar

### The Cassowary Satinash

*Acmena graveolens* fruits April to November, more prominently in July.

### A similar species, the Cassowary Gum

*A. divaricata* has similar fruit.

Both are large, pink or red in colour with rough and dry skin. A ring shaped scar on the top of the fruit is where the sepals were attached to the flower.



Cassowary Satinash  
*Acmena graveolens*



Cassowary Gum  
*Acmena divaricata*

## Local Lore

Stories abound about driving difficulties in the wet season, especially on the section of road between the ferry and the cattleyards before it was built up and surfaced in 1993. Deep holes would develop and fill with a soupy mixture of red swamp mud, nicknamed 'soup lagoons' by the locals who, unable to gauge the depth, were forced to drive slowly through them with one set of wheels up on the side! The deepest hole was just before the cattleyards - once the unfortunate driver of a mini-moke became so badly bogged that he held up the traffic until enough muscle power gathered - it took 14 people to physically carry it out!

# Nature Notes



**Native Bananas** are monocotyledonous plants like grasses, lilies and palms (monocotyledons are plants which sprout from the seed without producing twin seed leaves as dicotyledons do.) In bananas, the stem isn't really a stem, but is formed from layers of leaf bases rolled tightly around each other. The flower spikes are long and each has both male and female flowers with perfume and abundant nectar which attracts birds, insects and mammals such as blossom bats and Striped Possums. The female flowers grow at the base of the spike while the male flowers are formed near the tip. In the wild, some plants produce fruit without the flowers being pollinated. This is a disaster for the plant, as it is not producing seed and cannot reproduce, but they are nicer to eat!

It is these seedless varieties which are grown around the world commercially. The two species of native bananas which grow in this area, *Musa banksii* and the rare *Musa jackeyi* (has a maroon stem), both produce large quantities of seeds and although popular with many birds, have been described by Betty Hinton, a botanical artist who lives in Cow Bay, as 'banana flavoured buckshot'.



Of the two most noticeable tree ferns in this stretch of road, the large one is called **Cooper's Tree Fern** *Cyathea cooperi* while the fern with a thin trunk growing along the embankments is **Rebecca's Tree Fern** *Cyathea rebecca*.



Regrowth or 'secondary successional forest' is the first forest to come back after clearing. Many pioneer species are seen along the roadsides and include **Wattles, Brown Kurrajong, Red Ash or Sarsparilla, Bleeding Heart** and **Macaranga**. Secondary succession will occur unaided in most clearings that were once rainforest.



**Fan palms** *Licuala ramsayi* occur naturally in low-lying coastal tropical rainforests, along stream banks and swampy sites, often growing in extensive colonies beneath the canopy trees. Surprisingly hardy, this palm will also grow along ridges and slopes. Fruit is eaten by Cassowaries and many other birds. Fibres at the base of leaves are used by Shining Starlings for nesting material.

A good deal of botany can be learned just by travelling the road to Cape Tribulation and observing the wide variety of flowers and fruits which fall on the road from overhanging trees. A traveller once arrived in the Parks and Wildlife Service office bearing a large fruit of the Cassowary Satinash tree, protesting that it had fallen on his car as he drove past, and practically insisting the tree should be removed!

## Have you been asked ...

*Will the rainforest be able to survive if all the freehold blocks are built on?*

**A:** Yes. But as more house sites are cleared and domestic animals introduced, forest patches become increasingly fragmented and isolated. Some plants and animals may be unable to find the different foods and other resources they need to survive. For those species which require large home ranges, for example Rufous Owls and Grey Goshawks, fragmentation of the forest can mean local extinction. For small or declining populations, factors such as inbreeding and distress from continuing disturbance could mean a longer, slower decline, but still result in the eventual loss of species.

*What is World Heritage?*

**A:** The World Heritage Convention is based on international cooperation. This United Nations

sponsored treaty was established in 1975 to help protect areas in the world which are important to everyone. The Wet Tropics World Heritage Area was listed as a natural World Heritage site in 1988, satisfying all the criteria for listing:

- 1) It is an outstanding example representing the major stages of the earth's history;
- 2) It is an outstanding example representing significant, ongoing ecological and biological processes;
- 3) It contains superlative natural phenomena and areas of exceptional natural beauty;
- 4) It contains the most important and significant natural habitats for conservation of biological diversity, particularly rare and threatened species (many of these are all that remain of important evolutionary lineages).

Listing means Australia has agreed to protect, conserve, rehabilitate, present and transmit the World Heritage Area's values to future generations. We are in good company - other World Heritage listed icons include the Acropolis, the Great Pyramids of Egypt, Stonehenge, Mt Everest and the Grand Canyon.

## Derivations

**Tree fern** *Cyathea* spp.

*Cyathea* = Greek *cyathos*, a cup. The membrane covering the case that bears the spores is cup-like.



# Facts & Stats

## CLIMATE

☒ Daily temperatures range from a maximum of 35°C to a minimum of 16°C

☒ Average humidity during summer months is 78 per cent. However there are many days when it reaches the high 90s.

☒ This area receives 75 to 90 percent of its rainfall during the wet season from December to April, when daily falls of 250mm are often recorded.

☒ We have distinctive wet and dry seasons because of the changing position of the Monsoonal Trough. In the wettest quarter (Jan-Feb-Mar) the trough is generally positioned over Cooktown. The heaviest rain falls south of the trough, so we are practically guaranteed a good soaking every wet season. The highest rainfall at this time of year is along the coast, and the Daintree lowlands are one of the 'wet spots' of Tropical North Queensland.

☒ In the driest quarter (Jul-Aug-Sept) the Monsoonal Trough is far away in the Northern Hemisphere. The winds are mainly south-easterly trade winds. They have absorbed moisture for thousands of miles over the Pacific Ocean and Coral Sea. The Daintree coastline and mountains trigger the release of this moisture.

☒ Higher altitudes receive more rain at this time of year than lower areas. A coastline at right angles to the wind receives more rain, whereas areas that are parallel to the wind are drier. (Incidentally, that's why the stretch of the Cook Highway north of Cairns is drier than the surrounding rainforest - the coastline runs parallel to the trade winds.)

### ☒ Average annual rainfall:

LOS ANGELES	381 mm
NEW YORK	1086 mm
LONDON	593 mm
ROME	744 mm
BERLIN	603 mm
TOKYO	1565 mm
BRISBANE	1177 mm
SYDNEY	1218 mm
MELBOURNE	658 mm
PERTH	868 mm
MOSSMAN	2370 mm
CAPE TRIBULATION	3883 mm

(The wettest spot in north Queensland is Mt Bellenden Ker which has an average rainfall of 6411 mm. The wettest year on record was in 1979 when Mt Bellenden Ker received 11,251 mm.)

**Native Banana** *Musa banksii* and *M. jackeyi*  
*Musa* = Arabic *mouz/mos*, banana means 'tree of paradise'.

**Cassowary Satinash** *Acmena graveolens*  
*Acmena* = Greek *acmenae*, beautiful nymph of Venus.

## Further Information

Daintree Rainforest Foundation, phone (07) 4098 9222, website: [www.daintreerainforestfoundation.com](http://www.daintreerainforestfoundation.com)  
Australian Rainforest Foundation, phone (07) 4051 2000, website: [www.arf.net.au](http://www.arf.net.au)  
Australian Tropical Research Foundation (Austrop), (07) 4098 0063, website: [www.austrop.org.au](http://www.austrop.org.au)



Flipbook for subdivision maps

☒ What Makes the Daintree Coast Special?

☒ Timeline

# Facts & Stats

## ABOUT THE WET TROPICS WORLD HERITAGE AREA

☒ The Daintree Coast is only a part of the Wet Tropics World Heritage Area. The total World Heritage Area covers 894,420 hectares (nearly 900,000 hectares) extending 450km along the north-east Queensland coast from Townsville in the south to Cooktown in the north. In some places the World Heritage Area (WHA) is only a few hundred metres wide and in others as much as 60km wide. In this northern section there are places where the rainforest 'meets' the coral reefs of the World Heritage listed Great Barrier Reef.

☒ Protests that occurred in 1981 on Mount Windsor Tablelands and the 1983-84 Blockade at Cape Tribulation brought attention to the plight of the northern rainforests and served to provide momentum to the process which eventually led to World Heritage listing on December 9, 1988.

☒ Commercial logging was banned in the WHA's state forests in early 1988 and is prohibited under State and Federal World Heritage legislation.

☒ World Heritage properties in Australia do not become Commonwealth property, nor does ownership or control pass to any international body or foreign power. World Heritage listing is a special layer of protection for the Wet Tropics. The WHA lies over the existing land tenures.

☒ The Wet Tropics Management Authority (WTMA) coordinates the management of the Wet Tropics over a wide range of land tenures (types) including a small amount of private property (about 2%), national parks, forest reserves, Aboriginal reserves, nature reserves and a range of leases.

☒ Day to day management is the responsibility of the individual landholders and land management agencies (eg. Environmental Protection Agency, local governments including Yarrabah and Wujal Wujal Aboriginal Community Councils).

☒ The area could lose its World Heritage status if its heritage values are degraded or destroyed. Its future depends on careful planning and management by State and Federal Governments, local communities and the tourism industry.

☒ It contains the most complete and diverse living record of the major stages in the evolutionary history of land plants (from the very first plants on land to the higher plants, the Gymnosperms and the Angiosperms), as well as one of the most important living records of the history of the marsupials and the world's songbirds.

☒ The WHA 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.)

☒ Although representing less than one tenth of one percent of the land surface of the Australian continent the WHA contains:

- 65 percent of Australia's fern species
- 21 percent of Australia's cycad species
- 37 percent of Australia's conifer species
- 30 percent of Australia's orchid species
- 36 percent of Australia's mammal species (including 30 percent of the marsupial species, 58 percent of the bat species and 25 percent of the rodent species)
- 50 percent of Australia's bird species
- 25 percent of Australia's frog species
- 23 percent of Australia's reptile species
- 41 percent of Australia's freshwater fish species
- 60 percent of Australia's butterfly species

☒ The plants and animals of the Wet Tropics have elements that relate to eight major stages in the Earth's evolutionary history (mya = million years ago):

- 1. Age of Pteridophytes** - ferns (420 - 325 mya)
- 2. Age of the Conifers and Cycads** (208 - 144 mya)
- 3. Age of the Angiosperms** (125 - 45 mya)
- 4. Final break-up of Gondwana** (45 mya)
- 5. Origins of Australian sclerophyll plants and marsupials** (45 - 5.3 mya)
- 6. Origin and radiation of songbirds** (125 - 110 mya)
- 7. Mixing of the continental plants and animals of the Australian and Asian continental plates** (4 mya- 10,000 years ago)
- 8. Extreme effects of Pleistocene glacial periods on tropical rainforest vegetation** (1.6 mya - 10,000 years ago)

# Walu Wugirriga

## Alexandra Range Lookout

Walu Wugirriga means 'look about'

- *Walu* is pronounced 'wah-lu'
- *Wugirriga* is pronounced 'oo-gid-ee-gah'  
(the *w* is silent and *girr* is pronounced 'gid')

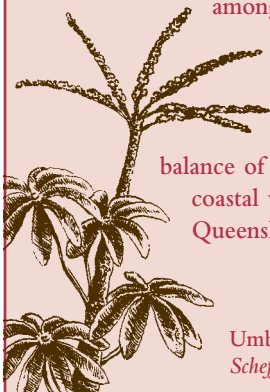
### History

The Lookout is part of a 38.3 hectare parcel of land bought by the State Government in 1993 using Wet Tropics Management Authority funds (most of the land is below the escarpment). Increasing use by tourists and tour operators was a major concern to the private landholder and highlighted the need to manage the site. The design for 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 Aboriginal representatives, who are recognised as the traditional owners of the land. By the time it was officially opened in 1994 the site was receiving 150,000 visitors a year.



### Plant Calendar

The **Umbrella Tree** *Schefflera actinophylla* is a vigorous native which sends out long sturdy shoots. Its huge glossy leaves and handsome red flowers appear as though arranged along the spokes of an umbrella. From March to October birds love to eat the fleshy fruit and spread the seeds in their droppings. As a consequence, umbrella trees are often found growing high up amongst the forks and branches of much larger trees. Unfortunately, this native of tropical Queensland is now disrupting the ecological balance of the sub-tropical forests and coastal woodlands of south-east Queensland.



Umbrella Tree  
*Schefflera actinophylla*

### General Notes

Features along the coastline starting from the closest seaward point:

- ☒ Snapper Island, one nautical mile south-east of Cape Kimberley, is a high continental island that once formed part of the mainland. It rises 99m above sea level and is surrounded by narrow fringing reef. Lime was once produced on the island by burning coral in lime kilns. Lime was needed to increase soil fertility which becomes depleted after a few sugar cane seasons. The watercourse stonework from an early Chinese market garden is still visible on the island today. The island is now a national park with a small camping ground and picnic area. Its degraded areas are being revegetated with seedlings raised from seed collected from the droppings of the Pied Imperial-pigeon
- ☒ Daintree River mouth. Maps still show plans for a township called Whitby - after the town where Cook's ship Endeavour was built. The town never eventuated, however one person currently lives there.
- ☒ 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 15km north-east of Port Douglas
- ☒ Wonga Beach (a popular camping spot for tourists and now a satellite suburb of Mossman)
- ☒ Port Douglas and Island Point. The Marina Mirage is very noticeable with its white buildings
- ☒ Harris Peak, stands pyramid-like behind Port Douglas
- ☒ Double Island near Palm Cove (on a clear day).

### Safety & Comfort

- ⊕ The site can only accommodate seven small buses up to 8m long (e.g. Toyota Coaster, small Unimogs) and

# Nature Notes



The brilliant 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 are planting the caterpillar food plants **Pink Evodia** *Melicope elleryana*, **Yellow Evodia** *Euodia bonwickii* and **Little Evodia** *Evodiella muelleri* to attract the butterfly to their gardens.

The Ulysses Butterfly is attracted to red, blue and mauve colours and will sometimes come to rest on visitors' clothing.





Ulysses Butterfly *Papilio ulysses*




Flocks of **Pied Imperial-pigeons** (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 birds return to parts of northern Australia from Papua New Guinea in August/September and depart March/April after nesting in a large breeding colony on Low Woody. Regular monthly counts of birds showed 27,264 birds returning to the island each evening in November, declining to 5,727 in February.

These numbers represent half the total number of birds, since only one parent leaves the nest each day to forage on the mainland. The noise from the colony on Low Woody in the evening carries far across the water.

nine 4WD/2WD vehicles - up to 160 visitors. Congestion could occur if you stay more than 15 minutes. Therefore the quality of your visitors' experience and safety are very much dependent on your appropriate and courteous use of the site.  
 **Code of Conduct, Section 4**

 The next section of road is very narrow and winding. Drive slowly.

 Just beyond the Lookout there are two 'windows' or views of the Daintree coastline. Give your visitors plenty of notice that a view is coming up on the right and explain that it is illegal to stop because of the double lines. There may be photo opportunities on the return trip if it is possible to safely pull off the road.

## Cassowary Notes

Cassowary researcher Les Moore reports a very large female cassowary often forages and rests on the knoll directly west of the lookout. While Les was having a breather from his research and sitting quietly watching the comings and goings at the lookout in December 1997, he was surprised when the bird joined him on the knoll and spent an unruffled 45 minutes with him at the vantage point. He considers this bird a critical connection in the Daintree cassowary population.

## Local Lore

A right royal find! Queen Elizabeth and Prince Philip visited Snapper Island in 1970 for an unofficial picnic. The royal yacht sailed away without one of the boxes of silverware brought ashore for the meal, leaving a boatman subsequently amazed at his find!

## Derivations

**Umbrella Tree** *Schefflera actinophylla*  
*Schefflera* = Jacob Schefflera, 18th century German Botanist.  
*actinophylla* = ray-like leaves.

## Have you been asked ...

*Who was Alexandra?*

**A:** Presumably the lookout and a few other local features were named after Princess Alexandra, an attractive Danish princess who married King Edward VII of Great Britain in 1863.

## Facts & Stats

FROM THE LOOKOUT  
'AS THE PIGEON FLIES'

- 4km to the mouth of the Daintree River
- 7km to Snapper Island
- 4.5km to the ferry crossing
- 24.5km to Port Douglas
- 20km to Cape Tribulation



# Jindalba Visitor Area

‘Jindalba’ is the traditional place name for this area.

The Kuku Yalanji used this area extensively for food collection - workers digging foundations for the boardwalk found many nut cracking rocks there.

## History

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The Jindalba visitor area was built on a 64 hectare block bought back in 1996 by the Daintree Rescue Program. For thousands of years the Kuku Yalanji crossed these ridges down to the Daintree Coast. In the 1880s, pack horses and eventually wagons followed the Aboriginal pathways. There are still reminders of the many people who used these ridges as the southern gateway to the Daintree Coast. Workers have found old nut cracking stones, trees blazed as markers, and traces of old tracks.

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. Car parks and picnics areas have been built in these cleared areas, and more than 30,000 rainforest trees have been planted in the first step to return the forests to their natural state. Before you arrive at the Jindalba day use area, most of the regenerating forest beside the road was planted by Daintree Cassowary Care Group volunteers. The project began in 1996 and the trees are already 15 metres tall.

## The Loop Walk

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Some workers dubbed the earlier section of this boardwalk “hernia highway”. They had to wheel heavy barrows of concrete uphill along planks for the boardwalk footings. A series of stair/landing/stair sections now take the puff out of these slopes. Because the area is hilly the boardwalk is often high, in some places four metres above the ground, requiring handrails for safety. The long spanned bridges have also been built high and wide, allowing visitors to stop and enjoy views up and down the steep creeks while others pass by on their walk.

A junction leading off to a viewing platform is marked by a large Milky Pine *Alstonia scholaris*. At the platform, visitors can take a breather underneath a Variegated Fig *Ficus variegata* overlooking a creek which is crowded with King Ferns *Angiopteris evecta*.

Towards the end of the walk, where the longer graded walk re-joins the small loop walk, old cattle-pads can still be seen leading down to the creek. Just past this junction, Orange-footed Scrub Fowls have built their mound around the trunk of a Spicy Mahogany *Dysoxylum papuanum*.

## Interpreting the site

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Because Jindalba is on a hillside, the site provides excellent views from the ground to the canopy. This makes it a great place to explain the structure and processes of the rainforest, and this is the focus of the trackside signs. They explain that survival here is not as easy as it seems. Life in the Wet Tropics poses its own set of challenges – high rainfall, intense sunlight, soils leached of nutrients, competition for light and food, not to mention the occasional cyclone. Rainforests and their plants and animals have developed efficient ways of dealing with all of these. They are a successful evolutionary experiment whose marvellous designs for living have stood the test of time over the last 135 million years.

## To the light

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Trees make their own food using sunlight trapped by their leaves, and nutrients and water taken up via their roots. Rainforest trees usually don’t waste too much energy on producing large numbers of branches until they reach the canopy. They grow up straight and tall, branching to unfurl their leafy ‘solar panels’ as they near the light. Some of the trees here are over 30 metres. If grown in gardens where light competition is not so fierce, many of these rainforest species grow into smaller, short-trunked, rounded trees with dense foliage reaching to the ground. Many rainforest plants use the tall trees to get to the light. Orchids, elkhorns and strangling figs are epiphytes, attaching themselves high on trunks and branches. Vines hitch a lift by coiling around or hooking onto growing trees.

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 positions. The leaves are sugar factories. Chlorophyll converts the sun’s energy, splitting water 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 need water, and lots of it, to make sugar. During summer when sunlight is

intense, transpiration is high and soils are saturated, these rainforest giants can pump over 2000 litres of water per day back up to the canopy.

## Low light dwellers

If light = food, how do plants manage to grow in the gloom of the forest floor? They depend on catching sunflecks - tiny spots of light slipping past the canopy for a few minutes at a time. Their dark green leaves are very efficient at capturing sunlight.

Their chlorophyll 'turns on' immediately it is lit up and stays on longer when the light is gone. Some are exceptionally slow growing - leaves can last for more than seven years, and some of Jindalba's tiny plants may be 20 years old. Botanists have nicknamed them 'Oskars'. Oskar, a character in the novel 'The Tin Drum' by the German author Gunter Grass, was a little boy who didn't grow up. That is what has happened to these saplings. Deprived of sunlight, they are unable to reach their potential as magnificent rainforest trees. But there is hope. All they need is a gap in the canopy. Perhaps an old tree or even a branch will fall and give them a chance.

## Rainforest recycling

Up to 10 tonnes per hectare of leaves and branches fall each year from the canopy. All dead matter is quickly broken down to release and recycle nutrients, nothing is wasted. This efficient recycling allows giant trees to grow on even the poorest soils. Recyclers at each stage of the process allow those following to get a piece of the action, and feed lots of other animals into the bargain. Beetles and moth larvae bore through the wood, introducing fungal spores into the heart of the timber and allowing fungi to start decay. Striped possums tear the rotting wood to bits looking for insect



Seedlings of Daintree Penda *Lindsayomyrtus racemoides* wait on the forest floor for a chance to reach the sunlight.

larvae. A myriad of tiny creatures - mites, millipedes, and nematodes, go to work on the smaller matter and then countless microorganisms turn this litter into humus. And last, but not least, earthworms eat the humus, excreting nutrients in their casts which are taken up by plants to grow leaves, branches and flowers.

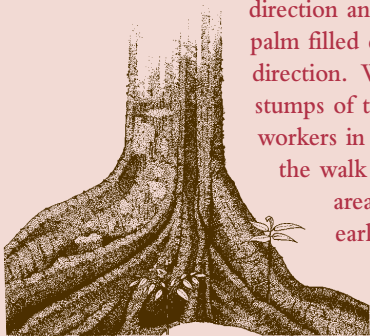
## Sex and finding a partner

Having sex poses problems when you can't simply pull your roots up to go and find a mate. The earliest plants used wind and water to spread their spores. Fern spores are carried by wind or water to a moist area where they germinate, sending up a tiny leaf. Male and female cells then form on the back of the leaf and fertilisation takes place. Instead of leaving the complex business of fertilisation to climate and chance, flowering plants offer pollen and nectar, bribing animals to act as sexual go-betweens.

# Nature Notes

Buttressed roots are a feature of this area of forest, perhaps stabilising the trees on the sloping hillside. At the highest point of the small loop walk a section of wide, elevated decking curves around the trunk of a large Spur Mahogany *Dysoxylum*

*pettigrewianum* giving visitors a close-up view of its trunk and buttresses in one direction and down across a palm filled creek in the other direction. Weathered, iron-like stumps of trees found by workers in the lower area of the walk indicate that the area was logged in earlier times, but Spur Mahogany trees



were often left by timber-cutters because the trunks were seldom straight. The seeds of the Spur Mahogany are favourites of both Metallic Starlings and Cassowaries.

The huge fronds of the ancient King Fern *Angiopteris evecta* are common on both walks near the creek. The fronds grow up to 5 metres long forming a magnificent rosette and can be up to one metre diameter at the base of the trunk in older specimens. Even the crozier (the curled end of a new frond, named after the fancy hooked stick that bishops carry) is amazingly large. Fronds and other parts of this fern have been preserved as fossils in coal formed 300 million years ago and don't differ greatly from those growing today.

## Wasps and figs

At the viewing platform overlooking the creek, visitors may be interested in the large fig towering above them, and its curious symbiotic relationship with tiny fruit wasps. There is no point looking for fig flowers – they are hidden inside the figs, which are like a hollow ball lined with tiny flowers. Some figs, the cauliflorous or trunk-bearing figs, have separate male and female trees, while the strangler figs have both male and female flowers in the one fruit. Only the tiny pollinating wasps can enter the fig through the small hole at the top of the fig. Once inside, the wasp pollinates the female flowers and tries to lay eggs on them. Some flowers will allow the wasp to do this successfully and others won't, depending on the length of the flower's style. Short styles allow successful egg laying, and in these the wasps grow and mature. The other flowers produce seeds. The wasps hatch and mate in the fig (the male wasps are wingless) and the females scoop up a load of pollen from the male flowers which will have just opened inside the fig, and fly out through a hole the male wasps chew through the fig wall. They fly off to pollinate another fig. Each fig species is pollinated by its own particular wasp species, and in all cases neither wasp nor fig could reproduce without the other. The loss of a wasp species would result in the extinction of its fig host.

## Spreading the seeds

Plants have evolved different ways to ensure the next generation has a good chance of surviving. This means getting seeds to germinate away from the parent, hopefully with a head start in suitable conditions. Some trees still depend on wind, water and gravity to disperse their seeds, but these passive methods are a disadvantage in dense forests. Many trees have evolved pulp covered seeds to bribe animals so that the seeds are eaten, excreted and dispersed across the forest. Few animals eat the highly poisonous cycad seeds, although cassowaries are known to eat them. They digest only the thin outer fleshy covering. The toxic seed is passed undamaged, ready to germinate in its own pile of cassowary poo compost.

## Apartment blocks

These tall trees are not only giant sugar factories feeding the forest, they are also high rise apartments housing countless other plants and animals. In the basement amongst the roots live worms, fungi and a myriad of tiny soil creatures. Ants, lichens, lizards and beetles live on the trunk. Bats, possums and parrots nest in hollows in branches and trunks. Butterflies, spiders, orchids, ferns and a multitude of birds live high in the canopy. Along the trunk and branches exposed tree hollows – some tiny, some large – collect rain and leaf litter to create moist, fertile mini-habitats. These hollows support many plant and animal species that survive only in these aerial oases.

## Cassowary Notes

Jindalba is visited by several cassowaries. If you see a cassowary, make sure your guests treat it with the respect these giant birds deserve. Don't approach closer than 10 metres, and make sure your guests don't feed it. This is dangerous not only for them, but for the bird itself which could come to rely on unhealthy human handouts, abandon its important seed dispersal role and possibly behave dangerously when demanding food from other visitors. Trees such as the Cassowary Plum *Cerbera floribunda* make this forest area a prime food source for the cassowary. Observant visitors may see cassowary droppings. They consist of a round 'plop' of many seeds with most of their outer soft coating removed during their trip through the cassowary's digestive tract! Cassowary Plum trees can be found hundreds of metres from the outer edge of this forest, evidence that the cassowary is vital in helping to revegetate the area by dispersing many seeds too large to be transported by other wildlife. In areas where cassowary droppings are plentiful, the boardwalk has been deliberately constructed either at ground level to allow cassowaries to cross over easily, or high enough for them to walk beneath. Experience has shown that once the birds discover they can walk underneath the boardwalk, they tend to continue to use the same pad.



## Plant Calendar

### Porcelain fruit *Fagraea*

*cambagei* falls from the tree April to November. The fruit is very eye-catching varying from white to hot pink. The leafy twigs of this tree look as though they were put together from plastic segments moulded in a factory. The flesh of its fruit, a bit like polystyrene, is inedible to humans but the native *Melomys* eat it.



Porcelain fruit  
*Fagraea cambagei*

The **Fawn-footed Melomys** *Melomys cervinipes* is one of the mosaic-tailed rats. The term mosaic-tailed refers to the skin on the tail which is patterned like tiles in a mosaic. The tails of 'ordinary' (also known as 'new endemic') rats *Rattus spp.* do not have a mosaic appearance. 'New endemic' refers to relatively recent immigrants which arrived when there was a land bridge connecting Australia with the northern regions. The Fawn-footed Melomys is an excellent climber, moving easily along the smallest branches to browse on leaves, shoots and fruits.



## Have you been asked ...

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### *Why are some leaves red?*

**A:** Research suggests that the red colour of new leaves may act to protect the photosynthetic mechanism inside the new leaves. Acting as a sunscreen, the pigment reduces the amount of light penetrating the leaf. New red leaves are still developing the internal organs necessary for capturing the sun's energy.

### *How old is that tree?*

**A:** There are many difficulties in correctly ageing trees, especially in the tropics. It is difficult to count growth rings when there is no distinctive growing season. (You can demonstrate this phenomenon to your guests on the trees which fell during Cyclone Rona.) To further complicate matters, the biggest trees are not necessarily the oldest. Soil type, amount of rainfall, availability of sunlight, position (near water or on a drier ridge), and length of time spent in the understorey before emerging are all factors in determining size. However, there is no doubt that some trees seen today are hundreds of years old.

### *Do vines twist in the opposite direction in the northern hemisphere?*

**A:** Almost all vines twist themselves in an anti-clockwise direction - whether in the northern or southern hemisphere.

### *What useful role do leeches play in the forest ecosystem?*

**A:** Like mosquitoes and other creatures which may annoy us, leeches play an important part in the ecosystem, acting as both predators and prey in the life cycle of other animals. Leeches are entirely carnivorous. Many are 'sit and wait' predators feeding on insect larvae, snails, crustaceans and worms. Others feed on the blood of frogs, water birds, reptiles, fish and mammals - including humans. They are also a good source of food for fish and in the United States leeches are grown commercially as bait for fishing. Medically, leeches are still important as a source of heart disease treatments such as anticoagulants (leeches use anticoagulants to ensure their victim's blood doesn't clot and give the leech a stomach ache) and vasodilators (which they inject into their host to open up blood vessels). Leeches are also used in plastic surgery to prevent bruising and in the re-attachment of amputated limbs. Leeches are relatives of earthworms and are included in the phylum Annelida. Unlike other annelids, true leeches lack bristles or hairs and have a fixed number of 32 segments. There is no comprehensive list of Australian leech species, but researcher Fredric Govedich estimates there are about 100 species of which only about half have been taxonomically described.

You can tell which family a leech is from by the bite marks it leaves - a 'v' shape is from a two-jawed leech and a 'y' shape is from a three-jawed leech.

Some leeches have no eyes, others have up to five pairs.

Mostly, they sense their prey through vibrations and carbon dioxide emissions (blow on one and watch the reaction).

• Frederic Govedich, an American student studying Australian leeches, provided the above information. He says leeches are "cute little suckers - they really get attached to you after a while." Frederic has posted detailed information on the following website: [www.invertebrate.ws](http://www.invertebrate.ws)

## Derivations

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### *Milky Pine *Alstonia scholaris**

*Alstonia* = Dr Charles Alston, professor of medicine and botany, University of Edinburgh

*scholaris* = wood was used for school boards in Burma

### *King Fern *Angiopteris evecta**

*Angiopteris* = Greek angeion, a vessel + pterus, winged

### *Spur Mahogany *Dysoxylum peltigrewianum**

### *Spicy Mahogany *Dysoxylum papuanum**

*Dysoxylum* = *dys*, bad + *xylon*, wood (refers to odour)

## Further information

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*Tropical Topics* Vol. 1 No. 13 July 1993 pg 2 discusses the insect go-betweens which aid pollination.

The Daintree Discovery Centre staff can help with plant identification. A visit to the Centre is likely to greatly enhance your visitors' experience and is highly recommended. Phone 4098 9171



# Cow Bay

## *New Settlements in the Rainforest*

Locals are divided over how Cow Bay was named. Some say it is for the sea cow or dugong which used to feed offshore, others that it was cows of the land-based variety which used to feed near the beach, or because cattle had to swim ashore from a barge after being transported to Cow Bay for fattening.

### General Notes

☞ The Aboriginal place name for Cow Bay is Yirrkiji and is pronounced 'yid-ki-gee'.

☞ The Cow Bay airstrip is a privately owned airstrip classed as an Aerodrome Landing Area, so it does not come under the jurisdiction of the Civil Aviation Authority.

### History

- Early settlers arrived here in the late 1880s and grew crops in the area around Hutchinson Creek and Bailey's Creek. Presumably Bailey's Creek was named by Dalrymple after F.M. Bailey (1827-1915) who wrote the seven-volume 'Flora of Queensland' and who also founded the Queensland Herbarium.
- From 1877, all the land south from Cape Tribulation was declared open for selection on payment of 'selection rent'. John Moffat, founder of Irvinebank tin mining, selected 4000 acres (1,600 hectares) in 1883. Moffat pushed the government to build a sugar mill but because there was no easy way to transport processed sugar, a mill was built in Tully instead.
- The Chinese grew rice (dry farming, not paddy fields) there in the 1880s. During the period 1891 to 1910 maize and cane were grown here.
- In 1929 the Almason Plantation grew bananas and tropical fruit. 'Almason' was a company name derived from Mr Allen, a Brisbane shareholder, and two Mason brothers, Colin and Andrew. The company was not successful and the family moved to Cape Tribulation in 1932.
- In 1934 the area suffered a severe cyclone and the plantation was destroyed. Locals recalled an 11m storm surge. Much of the vegetation along the coast between Cape Kimberley and Bailey's Creek was said to have been heavily damaged.
- The Mason family tried growing rice near Bailey's Creek for a couple of years in the late 1940s after the Second World War, but without good results. However, rice fared better at Cape Tribulation and Paul Mason, the current owner of the Cape Trib Store, remembers eating his father's 'home-grown' rice as a child.

- In the 1950s pineapples were grown and a new banana plantation was established. Timber cutting and cattle fattening also occurred.
- The airstrip was built in the early 1980s at the same time as the Southedge-Daintree Pastoral Co. subdivision.

### Subdivisional History

*Why are there 'For Sale' signs in the rainforest?*

**A:** Southedge-Daintree Pastoral Co. (owned by Arne Pedersen and George Quaid Jnr) began buying land in the Daintree Coast area in the early 1970s. Often called 'the Dane', Arne Pedersen reportedly had made his fortune after patenting Carmen hot hair rollers, which allowed the plastic curlers to be heated without melting the plastic. Local lore tells of Mr Pedersen coming to Mossman with money to invest in an agricultural empire. Supposedly, the first real estate salesman he approached was about to go to the pub for his afternoon beer and suggested that he return the next day. Instead, Pedersen walked over to the next real estate office which was owned by George Quaid Jnr who invited him to sit down...

Property bought included land in the Daintree, Southedge, Starcke and Iron Range for agricultural purposes. Cattle from the Southedge property were to be fattened in the Daintree area. In 1976 a road was pushed through from Bloomfield to Cape Tribulation with the intention of droving cattle down from Starcke Station. However, the intensive labour required for clearing rainforest and cattle transportation costs proved to be excessive.

By 1979 the Company was reducing its agricultural holdings by selling off leasehold blocks in the Cow Bay area, but retaining its freehold blocks. At that stage the Town Planning Scheme left the land north of Alexandra Range zoned 'Agricultural' which did not allow for subdivision into small blocks.

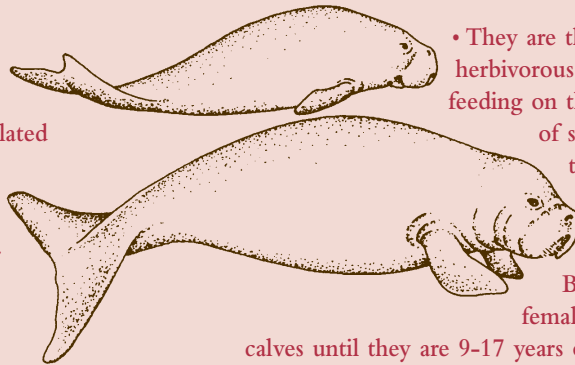
In common with the thinking of the time, the Douglas Shire Council had passed a by-law which allowed for concessions to be made for rural subdivision applications where the slope of the land was greater than 12.5 percent. A slope greater than this was

# Nature Notes



The **Dugong** *Dugong dugon* is most closely related to the elephant family, but is often known as the 'sea cow'. The related Manatees inhabit warm waters of the Western Atlantic Ocean. Manatees have a platypus-like tail; the tail of the Dugong is like that of the whale.

- These animals are thought to have given rise to the mermaids of sailors' legends, perhaps because mother dugongs cradle their young.
- There are an estimated 12,000 dugongs on the Great Barrier Reef (it was granted World Heritage status partly because of this), with 80 per cent of the population north of Cooktown and another major population between Hinchinbrook Island and the Whitsunday Islands.
- They are usually seen on inshore seagrass beds, but have been found 10km up rivers and over 60km offshore.



• They are the only strictly herbivorous marine mammal, feeding on the starchy rhizomes of seagrasses, eating up to 40 kg a day.

• Dugongs can live for 70 years. Breeding is slow, females not producing calves until they are 9-17 years old. A single calf is born and stays with its mother for at least 18 months. She does not calve again for three to seven years.

• Population growth is thought to be less than five percent a year.

• The greatest threats to dugongs are: destruction of their habitat (sedimentation, trawling, cyclones); nets which drown the animals (500 have died in shark nets since the 1960s); and boats.

• Dugongs are allowed to be hunted by Aborigines and Torres Strait Islanders with the appropriate permit.

deemed to be unsafe for the operation of a wheeled tractor. This was the argument used by Southedge-Daintree Pastoral Co. which persuaded the Queensland State Government (with Russ Hinze as Minister for Local Government) to allow blocks to be subdivided to a minimum of one hectare in Cow Bay, despite initial opposition by the Council. Early marketing offered generous terms. Although local residents in the Mossman area were very sceptical, it quickly became apparent there was a market for rainforest blocks. Land is still changing hands - prices vary from \$25,000 to \$70,000 for a one hectare lot.

## Cassowary Notes

The Cow Bay area has been classified as *Outstanding Cassowary Habitat Zone* by Crome & Moore (1993). The habitat complexity is high and it is probably the most productive area for cassowaries in the Daintree lowlands. In the lowlands and swamps of western Cow Bay and McLean Creek the population density is as high as the best habitats in Mission Beach.

## Have you been asked ...

### *Where do all the side roads lead?*

**A:** All the roads seen from the main road are cul-de-sacs servicing freehold blocks of land, with the exception of Palm Road which is a loop. Many access driveways appear as grassy tracks leading off the main road.

**Note:** Stay away from residential areas and respect the privacy of residents. Many live here for a quiet and tranquil lifestyle.

 Flipbook for Maps

# Hutchinson Creek

*'For me, cassowaries capture the essence of everything that is great and mysterious about the Wet Tropics'*

*William Cooper  
(wildlife artist, Order of Australia)*

## General Notes

Hundreds of trees nearest the road in this section have been planted with funding from the Daintree Rescue Program. All are native rainforest species common to the area.

Along the straight section of road opposite Wilderness Lodge, between the road and Hutchinson Creek, are the remains of old pits where gravel was dug for most of the original Southhedge-Daintree Pastoral Co. subdivisional roads. Much of the soil in this area is comprised of colluvium, a wash of stony material, rather than the usual alluvium or fine silt. This area was purchased by the Daintree Rescue Program and is now the site of the volunteer-run Daintree Cassowary Care Group nursery which provides free seedlings for rainforest revegetation.

Further on is a planting of star apple trees, easily identified by their two-toned green and bronze coloured leaves. Star apples and many other South American and South East Asian fruits such as rambutans, rollinias and sapotes, which thrive in our similar tropical climate, are becoming the basis for a viable exotic tropical fruit industry in North Queensland.

Beyond Candlenut Road on the left is a large area of cleared land, now quite overgrown, which was once a plantation of 1500 Oil Palms *Elaeis guineensis*, a native of tropical Africa. Grown successfully in Malaysia in commercial estates, they had originally been planted by Southhedge-Daintree Pastoral Co. in the mid 1960s when there was a good market for bio-degradable detergents in Europe made from palm oil. (Experimental plantations were also established at Starcke Station and Iron Range on Cape York Peninsula, however the trees at Starcke died and the ones at Iron Range were removed when the property became a national park.)

The trees which originally grew here now line the road into Port Douglas. The palms were dug up individually, lifted onto a semi-trailer with a crane and transported to Port Douglas when Christopher

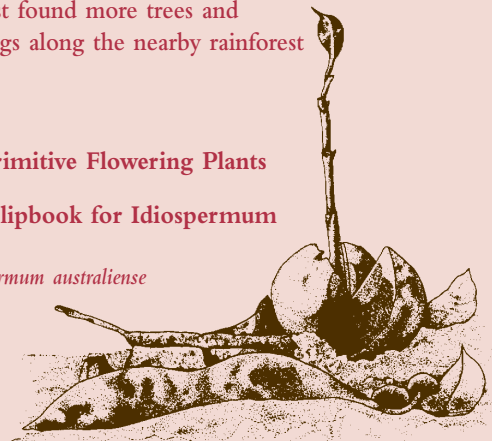
## Cattle deaths lead to rediscovery of primitive plant

It was cattle from the Daintree Tea Company which put the rare **Idiospermum** (or Ribbon-wood) *Idiospermum australiense* back into the spotlight in 1971, after it was thought lost since 1902. After a spate of cattle deaths, a post mortem showed that the unfortunate animals had eaten the large toxic seeds of this primitive plant. A botanist from the Queensland Museum arrived on the scene to find the anxious farmer had, quite understandably, removed the culpable tree and thrown all the remaining seeds into his pit toilet. Fortunately the botanist found more trees and seedlings along the nearby rainforest creek.

 Primitive Flowering Plants

 Flipbook for *Idiospermum*

*Idiospermum australiense*



Skase was building the Mirage complex in the mid-1980s. His company bought the oil palm plantation, removed the trees, then sold the land separately. Once re-planted in Port Douglas, they were treated to a special irrigation system with anti-fungals and nutrients to best ensure their survival. Rumour has it that the Gold Coast nursery which won the contract was fined \$2,000 for each tree that died! When cut open, each small palm nut smells just like a coconut. No wonder the native melomys enjoys eating the fruit! Some concern exists that this species is becoming naturalised as young plants have been found in some parts of disturbed forest.



## The school in the rainforest

• This information was contributed by the teachers. Alexandra Bay State School is situated half-way between the Daintree River and Cape Tribulation. The school takes its name from the large bay stretching between the mouth of the Daintree River and Cape Tribulation. It is a growing school, with four teachers and around 75 students enrolled in Years 1 - 7 in 2003. There is also a half-day preschool program run through the Early Education Unit. Most students catch a local school bus which runs from Cape Tribulation to Cow Bay. Some students travel from as far south as the Daintree River. Local high school students catch a daily bus into Mossman.

The school grounds cover eight hectares, but much of the area is either rainforest or an unused portion, where the school is developing an orchard and rainforest plot. School facilities include a multi-purpose court (with lights), a permanently covered adventure playground, two double teaching spaces and two undercover areas.

The school provides its own electricity and water. The energy source is through a Remote Area Power System established in 1995. This set up the school with a solar array, battery bank, inverter and a back-up generator. An upgrade took place in 2002. We now have a fully automated 24-hour power source - and while energy conservation is important, we don't operate much differently to a school running on mains power. Our water supply is through a bore on site and rainwater tanks for drinking water.

The school's programs are often linked to its unique environment, with integrated botanical and environmental themes. Of course, we also have all the usual classroom subjects as required by the Queensland education system! Another strength of our school is its instrumental music program, with many students participating in bands, ensembles and as individuals. We take great pride in the quality of our work and the strengths of our students. As well, you will often see our bright maroon and turquoise uniforms as we travel "over the river" to access sporting, cultural and fun activities not available in our area.

## Everyone can make a difference

Enlightened by the school's enormous efforts, now might be a good opportunity to encourage your visitors to take part in a conservation initiative here in the Daintree or at home, such as Landcare, Waterwatch, or perhaps form a tree-planting group through their local school if there isn't one. You could expand to exploitation of global resources but then take it back to the grass roots level of what can be done by people at home, for example recycle and re-use, become a vegetarian one day a week, ride a bike or walk more often, the list is endless. Ask for more suggestions!



## Plant Calendar

**Cluster figs** *Ficus variegata* fruit from November to March. Cluster (cauliflorous) figs are very common trees of regenerating areas, rainforest margins and creek banks.

There are three common cluster figs in the area and several more which are less common. One of the most common is *Ficus variegata* which grows along the roadsides, drainage lines and in the mature primary rainforest as a canopy tree easily recognisable by its



smooth trunk, fruiting branches and elaborate buttresses. Most of the cluster fig species have sexes on separate trees, a condition called dioecy (di - two, oikos - house). The male trees produce the fruit containing fig wasps (which are inedible) and the female tree produces seed-containing fruit (which are generally sweet and attractive to dispersers - especially fruit bats). Male figs can usually be distinguished by the piles of rotting figs around the trunk. The fruit of strangler figs produce both seeds and wasps and so have both sexes in the one tree (money).

Cluster figs

Cut figs have a similar smell to the cultivated variety and some are edible. However there are so many *Ficus* species which are toxic, it isn't wise to taste them. Smell the fallen fruit, yes. Eat, no.

## History

The tea plantation is called the Daintree Tea Company and was established by the Nicholas family in 1978. The original seed came from near Innisfail and the first harvest took place in 1985. The leaves are harvested by machine usually every two weeks. The tea leaves we brew grow on the *Camelia sinensis* bush which originated in China. The 100 per cent Australian owned and produced tea is available from local shops and by mail order from [www.daintreetea.com](http://www.daintreetea.com)

## Safety & Comfort

⊕ Code of Conduct for Hutchinson Creek crossing: use the bridge! Yahooing through the creek is irresponsible and affects water quality downstream.

## Have you been asked ...

*Why does the top of the hill opposite the tea plantation look so flat?*

**A:** Before Hutchinson's Hill was bought back as part of the Daintree Rescue Program (DRP), the previous landholder bulldozed a track up the hill and cleared a large house site on top presumably in an attempt to make it more saleable. The property has been replanted by the DRP in conjunction with the Green Corps.



# Nature Notes



**Taro** growing on the left before the Rainforest Camp caravan park was cultivated by Aborigines as a food source. Taro can be confused with Cunjevoi *Alocasia brisbanensis* which is toxic. Both species have 'elephant ear' leaves up to 2m long but the distinguishing feature is where the stalk joins the leaf. In the Cunjevoi it joins at the edge of the leaf.



Further on the right are examples of two different cluster figs - the larger *Ficus variegata* and the smaller *Ficus congesta* - recognisable because of its red juvenile leaves and clusters of small, rough figs on the trunk and on the ground. Cauliflory is common in tropical rainforest trees and appears to allow the tree to be pollinated or dispersed by animals that would be too large to pollinate flowers on fine branches - in this case bats and small possums. **Honeyeaters, the Long-tailed Pygmy Possum, blossom bats, moths, flies, beetles and cockroaches** have all been recorded as pollinators and seed dispersers on cauliflorous trees. Another advantage of cauliflory is that in some cases the pollinators are not the same ones pollinating the canopy trees, therefore reducing competition.



**Double-eyed Fig-Parrots** feed almost entirely on fig trees. These small, green, stumpy-tailed birds have colourful facial patterns which give the illusion of a double eye. They are Australia's smallest parrots and spend much of their time high in rainforest trees. Usually the sound of falling fruit is the only indication they may be feeding nearby, but during breeding time the constant rasping sound of fledgelings squawking for food makes observation much easier!



There are two species of **Bandicoot** which can sometimes be glimpsed at night on resort lawns. However it is usually in the light of day that their feeding activity becomes obvious. The **Northern Brown Bandicoot** *Isoodon macrourus* digs holes in lawns looking for insects. The **Long-nosed Bandicoot** *Perameles nasuta* also digs holes but larger and more conical to accommodate the animal's snout. At night its presence is indicated by a shrill, nasal squeak.



The **Southern Cassowary** *Casuarius casuarius johnsonii* is a robust manifestation of an ancient family of birds. Researchers estimate there are about 60 birds living between the Daintree and Bloomfield Rivers. These rainforests would be a very different place if there were no Cassowaries. 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. If these trees did not have an animal to disperse their seeds, they would only occur in concentrated pockets around the parent tree or where the seeds rolled into gullies or to the bottom of slopes. The dynamics of the entire forest might change. There are another 80 species of plants which are also assisted by the cassowary's eating habits. These species have smaller seeds which could be eaten and distributed by other animals but many are toxic. Eating such seeds poses no difficulties for the cassowary because it has a particularly 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. Other animals such as White-tailed Rats and Musky Rat-kangaroos may help distribute these smaller seeds but more often than not they damage the seed rather than disperse it intact.

## 📖 Glimpses of Wet Tropics Wildlife

The closed canopy section between Rainforest Village Caravan Park and Candlenut Road gives a welcome breath of fresh air and coolness. Note that a few exotic plant species occur beside the road. This is an important corridor for Cassowaries; drive slowly and you might spot one. An adult male with chicks and an adult female cross the road at this point almost on a daily basis and both have been hit by vehicles (one of those was a commercial tour vehicle). Fortunately both appear to have survived but it is not known whether they are carrying long-term injuries from the accidents. Both birds have been classified as at *Extreme Risk* by cassowary researcher Les Moore in the Daintree Cassowary Management Plan. If you see a Cassowary please record the details on a Cassowary Sighting Sheet or perhaps a passenger could do it for you.

## 📖 Useful Extras



Southern Cassowary

## Derivations

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**Oil palm** *Elaeis guineensis*  
*Elaeis* = Greek *elaia*, olive.

### Cluster figs

*Ficus congesta*

**Ficus** = Latin *ficus*, edible fig.  
**congesta** = crowded.

*Ficus variegata*

**Ficus** = Latin *ficus*, edible fig.  
**variegata** = refers to the variability of fruit colour.

### Long-nosed Bandicoot

*Perameles nasuta*  
*Perameles* = *pera*, bag, pouch + *males*, badger.  
*nasuta* = having a long nose.

### Idiospermum

*Idiospermum australiense*  
*Idiospermum* = *idio*, peculiar, in that the seed has three to four cotyledons + *spermum* = Greek *sperma*, seed.  
*australiense* = Latin, inhabiting the south.

## Local Lore

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After taking over responsibility for the road to Cape Tribulation, the Douglas Shire Council wanted to do something different, so road lines and some sections were marked with iridescent lime-green lines. Although the lines were popular with visitors and provided a good talking point, the Main Roads Department refused to grant the Council any dispensation and insisted they be painted over with 'standard' white lines.

## Facts & Stats

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🏠 The Cassowary is now listed as “endangered” by the Commonwealth Government. The Cassowary Advisory Group has been formed by a collection of concerned parties including including government agencies, researchers and local representatives from the Daintree Cassowary Care Group. The group provided the free yellow “take care” cassowary stickers which appear on many commercial vehicles. It has identified the greatest overall threats to Cassowaries:

- 🏠 ROAD TRAFFIC
- 🏠 ATTACK BY DOGS
- 🏠 HABITAT FRAGMENTATION WHICH LEADS TO POPULATION FRAGMENTATION
- 🏠 HABITAT CLEARING AND OTHER PRESSURES OF DEVELOPMENT
- 🏠 DISEASE
- 🏠 FERAL PIGS

# Thornton Peak

## *Boulders in the Mist*

*'That wilderness should be there for North Queenslanders,  
It should be there for people all round Australia,  
It should be there for everybody around the world.  
It should be there for the inhabitants of that wilderness,  
Our fellow creatures on this planet who don't have a vote ...'*

*Dr Bob Brown*

## General Notes

Coming or going, the grandeur of Thornton Peak can be appreciated if you slow down and pull over. Very often there are clouds resting on top. (These 'cap clouds' can also be seen from the ferry to the north-east, on the foothills of the Alexandra Range.) This 'mountain mass effect' which occurs on hills close to the ocean results in a montane climate where mists are frequent at relatively low altitudes. This phenomenon fosters a range of animals and epiphytic plants which would otherwise be absent.

Cloudstripping is the name given to a strange phenomenon that occurs in the montane or cloud forests of the uplands. As the cloud or mist passes through the vegetation, moisture clings to foliage and then drops like rain to the ground. In this case its not a good idea to get out of the weather by standing under a tree, you are better off out in the open in the swirling mist.

## Geology

Four hundred million years ago the Daintree Coast consisted of metamorphic rocks (formed when heat or pressure caused pre-existing sedimentary rock from the Hodgkinson Basin to recrystallise, but without melting) What is now the Daintree Coast was beneath the sea - the coastline was then part of Gondwana and it was 100km west of here, around where Chillagoe is today. Chillagoe caves, famous for their limestone formations, reveal coral fossils of an ancient coral reef.

The granite boulders perched on top of Thornton Peak are of a different origin. They are igneous rocks (which were once molten and usually contain crystals which grew as the molten material cooled). These boulders had their origins 2km below the surface. Granites are



## Plant Calendar

An amphitheatre of rainforest-covered hillslopes soon opens giving an almost birds-eye view of the canopy.

During spring and summer many trees are in flower standing out as patches of paler colour. The heads of

**Candlenut trees** *Aleurites moluccana* are prominent when flushed with pale new growth, and an occasional

**Flame tree** *Brachychiton acerifolius* will put up a burst of red flowers.

In some years the pink blossoms of **Yellow Bean**

*Ormosia ormondii* glows colourfully from dozens of robust trees while the crowns of

**Damsons** *Terminalia sericocarpa*

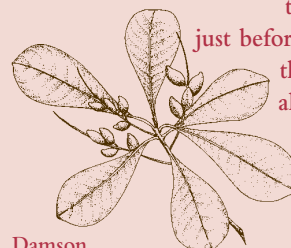
take on a reddish colour just before the annual shedding of their leaves. (Damson is also known as the 'Dead Horse' tree because of the flowers' distinctive smell!)



Candlenut tree  
*Aleurites moluccana*



Flame tree  
*Brachychiton acerifolius*



Damson  
*Terminalia sericocarpa*

# Nature Notes



The highly restricted distribution of plants and animals on Thornton Peak reflects a long history of isolation. The **Little**

**Waterfall Frog** *Litoria lorica* is a very rare species of torrent frog recorded above 600m on Thornton Peak. Experts don't know if it occurred elsewhere other than the Thornton Peak uplands. It disappeared before anyone could have a good look around areas such as the Carbine Tableland which shares most frogs with Thornton Peak. Although the frog hasn't been seen for a while its conservation status is 'endangered' - extinction is a hard thing to prove!



The **Thornton Peak Skink** *Calyptotis thorntonensis* is also restricted to the Thornton Peak massif. Rare plants include a **Zieria** and a **Caldcluvia** are also found on the peak. The tree **Gymnostoma** *Gymnostoma australianum* is Australia's only example of the casuarina-like Gymnostomas which were once wide-spread in Gondwana. The only known Australian populations are at Noah Creek, Roaring Meg Valley and Thornton Peak.



Australia's only species of **rhododendron** *Rhododendron lochiae* is restricted to the wet mountain tops of the Wet Tropics.

formed by heat and pressure and, just as hot air rises, so does hot rock. This huge mass (called a pluton after Pluto, the Roman god of the underworld) rose on a convection current and eventually cooled before reaching the surface. The surrounding metamorphics, by now out of the sea, slowly eroded away leaving the spectacular spine of ranges we see today.

## Have you been asked ...

### *Why are the frogs disappearing?*

**A:** This question is being asked worldwide and in many countries the reasons are obvious: pollution and habitat loss. But why are they vanishing from apparently pristine environments such as the high altitude forests of Panama and eastern Australia? In Australia, frogs which breed in upland rainforest streams have been affected. It is suspected a major cause is a frog chytrid fungus which damages the frog's skin. It has been listed nationally as a key threatening process.

## Derivations

### **Flame Tree** *Brachychiton acerifolius*

*Brachychiton* = Greek *brachy*, short + *chiton*, a coat of mail or tunic, refers to a coating of short massed hairs over the seeds.

*acerifolius* = *acer*, maple-like + *folius*, leaves.

### **Gymnostoma** *Gymnostoma australianum*

*Gymnostoma* = *gymno*, naked + Greek *stoma*, mouth.  
*australianum* = Latin *australis*, from the south land.

## Further Information

Listen to Jean-Marc Hero's tape *Frog Calls of Northeast Queensland* and David Stewart's CD *Australian Frog Calls, Tropical North-east* and practice a few calls.

Amphibian diseases home page:

[www.jcu.edu.au/school/phtm/PHTM/frogs/ampdis.htm](http://www.jcu.edu.au/school/phtm/PHTM/frogs/ampdis.htm)

Read *A Field Guide to Australian Frogs* J. Barker, G. Griggs, M. Tyler.

Read *Australian Frogs, A Natural History* M. Tyler  
Contact The Tablelands Frog Club for books and tapes at Mail Bag 71, Yungaburra, Qld. 4872.

## Facts & Stats

▣ Mt Bartle Frere is Queensland's highest mountain at 1622m.

▣ Bellenden Ker is second highest at 1582m.

▣ Contrary to popular belief, Thornton Peak at 1,374m is not Queensland's third highest mountain. It ranks 10th behind a number of peaks on the Main Coast Range and Bellenden Ker Range.

▣ Mt Kosciuszko (Australia's highest peak) is 2228m.

▣ George Dalrymple named Thornton Peak after William Thornton, the Collector of Customs in 1873, when Dalrymple explored and named the Daintree River.



# Cooper Creek and Thornton Beach

Photo opportunities abound along Thornton Beach towards the mouth of Cooper Creek. However, remind your visitors that this is crocodile habitat!

## History

Just off-shore is Struck Island where you may watch sea birds circling their nests. Struck Island was named after a local Jim Strucke, who had a coconut plantation at Thornton Beach. Newlyweds Walter and Myrtle Mason spent an uncomfortable night on the island after their rowboat was caught in rough seas.

Formerly a Douglas Shire Council campground, Thornton Beach was redeveloped as a day-use area in order to retain fragile vegetation along the foreshore. This vegetation sustained severe damage from Cyclone Rona in 1999. The Daintree Rescue Program has provided the picnic shelters.

## Cassowary Notes

An adult male cassowary regularly crosses the road just north of the Cooper Creek crossing and one of his chicks was killed by a car in 1995. The adult bird has been classified as *Extreme Risk* (the highest risk category in the Daintree Cassowary Management Plan) so be extra careful when you drive through this area.

## Safety & Comfort

⊕ The flat stretch of road from Cooper Creek to the small hill before Thornton Beach contains high quality rainforest with extensive fan palm forest. Many of the rare and threatened animals occur in this area, including

a population of Bennett's Tree-kangaroos. Drive slowly so your guests can appreciate it.

⊕ In the 1980s a 3m crocodile was removed by national park rangers. It was sighted just around the corner from where the causeway is now.

⊕ The water contains another 'delight', the Bullrout, a freshwater stonefish. They resemble stones and conceal themselves in creek beds or among rocks. The danger lies in the sharp venomous spines protruding from their body. These spines can easily pierce soft footwear, so wear substantial shoes when walking in water. If stung, immerse the foot in hot water to relieve the pain. Medical assistance may also be needed. The Bullrout does have one endearing trait: if disturbed it often rolls over and plays dead.

⊕ Douglas Shire Council is in the process of closing the road to the Blue Pool with a view to establishing a reserve for environmental and cultural purposes. To lessen the impact on the site, it is preferred that visitors are not taken here.

⊕ There is a public toilet at Cafe on Sea.

## Have you been asked ...

*Why is the water in Cooper Creek and other nearby creeks so blue?*

**A:** Apparently this colour is due to the presence of a blue alga. It thrives in the deeper cooler waters, away from sunlight and feeds on certain minerals in the clay. Shallow water in these creeks tends to be clear and unaffected by the alga which is most abundant in the deep shaded parts.

## Local Lore

Doing his usual run on a cool winter's night a local bus driver spotted a 3m crocodile lying across the road where Cooper Creek Wilderness Cruises clients wander down to catch the boat. There must have been enough warmth left in the road surface to entice her out of the water... Called 'thermal resting', this reptilian practice of lying on warm surfaces such as roads is often a death warrant for snakes.



## Plant Calendar

**Red Beech** *Dillenia alata* has bright yellow flowers which are often present at the same time as the ripe fruit, September to February. Birds usually get to the fleshy white aril that surrounds the black seed before visitors arrive! The tree is conspicuous by its red, flaky bark.



Like many Australian natives, it is not related to its European namesake. You can have a close look at the trees in the Thornton Beach picnic area.

Red Beech  
*Dillenia alata*

# Nature Notes



The **Red-legged Pademelon** *Thylogale stigmatica* is a small macropod living in the rainforest, seeming to favour regrowth areas with plentiful ground-layer vegetation. Where pademelons are numerous their paths through the forest and out to the grassy edge become quite prominent runways.



The **Musky Rat-kangaroo** *Hypsiprymnodon moschatus* (often shortened to Hynsi) is the smallest, and in many respects, the most primitive of the kangaroo group and represents an early stage in the evolution of kangaroos from an arboreal possum-like stock. These bandicoot-sized quiet, chocolate brown creatures usually forage for fallen fruits and small invertebrates in the cool of mornings and evenings, sleeping through the heat of the day and at night in a nest of dried leaves and soft vegetation. However, occasionally around the full moon, they have been observed foraging in the bright moonlight. Nesting material is skilfully transferred from mouth, to forepaws, then kicked backwards with the hindfeet to eventually be carried in the curl of its tail. Like possums it has a mobile first toe on the hind foot and is quite agile, climbing easily along steeply sloping branches. Although related to kangaroos it does not hop but moves along on all fours often at high speed.

 Flipbook for Musky Rat-kangaroo



A frog which can be found on rainy nights around Cooper Creek is the **Northern Barred Frog** *Mixophyes schevilli*. Following its loud *wahk* is often the only way of finding this large frog (up to 13cm long) whose beautiful brown patterns are perfect camouflage amongst the leaf-litter on the rainforest floor. Easier to find during the day is the tadpole. It is the largest in Australia growing up to 16cm long, including the tail.



Fish commonly seen in Cooper Creek are **Jungle Perch, Eel-tail Catfish, Archerfish, Pacific Blue-eyes** and **Rainbowfish**.



Flipbook for common fish



On cool mornings the **Saw-shelled Turtle** *Eseya latisternum* will find a sunny spot to warm up, but is usually spotted too late and all you see is the splash.

One lizard commonly seen is the **Eastern Water Dragon** *Physignathus lesueurii* basking in the sun on rocks or overhanging branches above creeks. It will quickly plunge into the water and swim away from danger. To help in aquatic habitats the Eastern Water Dragon has nostrils right on top of its snout

and a tail which is compressed laterally for easier swimming.

Plant and animal flotsam on Thornton Beach can keep some of your visitors happy while others wander off to take photographs. As well as the remains of plants and animals of the mangroves and sea some rainforest seeds will also be found amongst the flotsam. Unfortunately part of the flotsam will be garbage, looking unsightly and posing a real threat to wildlife. Plastics, which generally make up about 60 percent of rubbish, are the worst offenders. An estimated 100,000 mammals and 700,000 seabirds die each year as a result of an encounter with plastic litter. Fishing line, netting, rope, six-pack holders and other debris trap and strangle animals. Plastic is also eaten. An autopsy of an 8m Bryde's whale which died in Trinity Inlet near Cairns found six square metres of plastic in the whale's stomach. A dead dugong found on the rocks near the Rex Lookout had a large amount of fishing net, including floats and a Besser block sinker, wrapped around its tail. Dead turtles are often found with plastic bait bags and fishing lines blocking their guts. It is also common for dead sea birds to be found with hooks lodged in their digestive systems. Ensure that natural flotsam is left on the beach for the next visitor to appreciate, however set a good example and pick up a bit of plastic!

## Rubber thongii

### *Feral peril or endangered species?*

Researchers set out on a tough expedition to a total of 26 islands of the Great Barrier Reef to study this common but poorly understood inhabitant of almost every beach... the thong. Some of the questions researchers aimed to answer included:

- Do right and left thongs represent male and female? Evidence points to shops as mating sites (rights and lefts are found in these habitats connected intimately by special loops never found in specimens in the wild). Birth is nocturnal as there are more thong numbers at shop opening times. In the wild rights and lefts are found in equal numbers.
- What is their status? They are thought to be parasitic on the human foot and dependent on this host for dispersal. Reports date from recent decades (not recorded by early explorers and does not pre-date European settlement). The island beach individuals seem to represent escapees from the shopping malls therefore are feral rather than endangered.
- Is the thong a threat to the reef? Researchers are keen to continue their studies and are even willing to revisit all 26 Great Barrier Reef islands.

## Derivations

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**Red Beech** *Dillenia alata*

*Dillenia* = Johann Dillenius 1684-1747, a German Professor of Botany in England.

*alata* = Latin, *alatus*, winged.

**Macropod** = large foot

**Marsupial** = with a pouch

**Musky Rat-kangaroo** *Hypsiprymnodon moschatus*

*Hypsiprymnodon* = Greek *hypsos*, height + *prumnos*, the hindmost, refers to the disproportionate development of the hind legs + *odontos*, a tooth, refers to two pairs of lower incisors (one pair vestigial).

*moschatus* = Greek *moskhos*, musk, refers to musk glands which produce a strong odour.

## Further Information

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Read *Plant life of the Great Barrier Reef and Adjacent Shores* by A.B. Cribb & J.W. Cribb, out of print but available at libraries - a great source for identifying flotsam.

Read *Freshwater Fishes of Far North Queensland* by B. Herbert, J. Peeters, DPI

Read *Freshwater Fish, Fauna of the Wet Tropics region of Northern Queensland* by B. Pusey, M. Kennard, DPI

Read *Cassowary: Australia's endangered rainforest inhabitant* by C. Dwyer, Broad Books, East Palmerston.

Read *Australian Drift Seeds: a compendium of seeds and fruits commonly found on Australian beaches* by Jeremy Smith 1999 University of New England.

# Noah Creek Area

## *A Revolution in Evolution*

This valley is a hideaway for very rare plants which are found nowhere else in the world - a botanical refuge of vital importance.

### General Notes

☞ On the way to Noah Creek it is possible to see a big section of the massif known as Mt Hemmant. Sometimes at the end of the dry season part of the hillside changes overnight to orange-red. This occurs when the low-growing Resurrection Plant *Borya septentrionalis* is under stress. A week or so after good rain the entire colony of plants will green up again.

☞ Noah Creek is tidal to the bridge and although it looks very wide here, just a short way upstream around the corner it is a small creek.

### A Living Museum

Australia was once part of Gondwana, a vast southern continent covered in rainforest. Gondwana began to break into smaller continents about 180 million years ago, with Australia breaking away 45 million years ago. Australia's plants and animals continued to evolve in isolation. As the climate became drier, many species died while others adapted to the drier conditions. Only the mountainous regions of the east coast remained constantly wet. Here, small patches of cloudy wet mountaintops, very wet lowlands and deep, moist gorges

provided hideaways for tropical rainforest species during epochs when the rest of the continent was so dry that rainforests were wiped out.

These hideaways have been termed 'refuges' (refugium singular, refugia plural) and continue to be of vital importance as sites with many endemic and very rare plants. Thornton Peak, Cooper Creek, Little Cooper Creek and Noah Creek are areas of great botanical value and living descendents of Gondwana's plants can still be found here today.

📖 Flipbook for Timelines

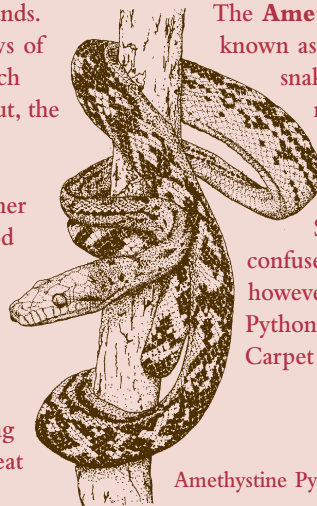
📖 What Makes Daintree Coast Special?

### Cassowary Notes

At least three adult cassowaries have been reported crossing the road to access the block on the seaward side of the road. The Noah Creek area was classified as *Critical Cassowary Habitat* in 1993. A series of speed bumps have been installed to ensure drivers slow down. This section of road passes through a Buyback block, and is not only important cassowary habitat, but a prime example of rare rainforest growing on sand.

## Nature Notes

**Pythons** do not possess any poison glands. They seize their prey with multiple rows of sharp teeth and squeeze it to death. Each time the unfortunate victim breathes out, the snake increases the pressure of its coils. Contrary to popular belief death is not caused primarily by suffocation but rather by heart attack. Pythons smell their food with a sensitive flickering tongue and most have a series of organs in pits along the jaw which can sense heat. Young fruit bats are favourite prey. Pythons lay up to 47 eggs which the mother protects and incubates by coiling herself around them, even producing heat by shivering her body.



The **Amethystine Python** *Morelia amethystina*, also known as the Scrub Python, is Australia's largest snake, averaging 3m and is a common resident of the Wet Tropics. The longest recorded, at 8.5m, was found near Gordonvale.

Small Amethystine Pythons are often confused with **Carpet Pythons** *Morelia spilota*, however the scales on the head of the Scrub Python are much larger than those of the Carpet Python.

Amethystine Python *Morelia amethystina*

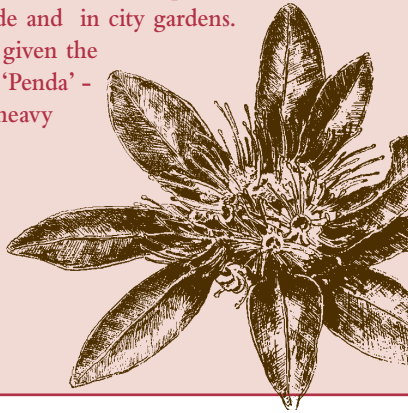




## Plant Calendar

The **Golden Penda** *Xanthostemon chrysanthus* is a very common riverbank tree in the north and occurs along the banks of Noah Creek. Its bright yellow flowers have earned it a place in the nursery trade and in city gardens.

Many trees are given the common name 'Penda' - it means hard, heavy wood.



Golden Penda  
*Xanthostemon  
chrysanthus*

### Safety & Comfort

⊕ Drive slowly over the speed bumps, both for your vehicle's sake and for the comfort of your passengers. The modified speed bump sign showing before and after images of the affect of speeding vehicles on cassowaries is a popular photographic opportunity. Watch out for visitors and their vehicles beside the road.

### Derivations

**Resurrection Plant** *Borya septentrionalis*  
*Borya* = J.B. Bory de St.Vincent, 1780-1846, Botanist and explorer.

**Golden Penda** *Xanthostemon chrysanthus*  
*Xanthostemon* = *xantho*, yellow + *stemon*, stamen.  
*chrysanthus* = Greek *chrysos*, gold + *anthos*, flower.

### Have you been asked ...

*Where are the animals?*

**A:** Apart from birds, the wildlife you are most likely to see will be the bandicoots and snakes flattened on the road. Animals active during the day (diurnal) are mostly very aware of our presence and keep their distance. Most mammals are nocturnal (active at night) so you could suggest a night spotlighting tour - but don't overemphasise the chances of viewing wildlife - the Daintree lowlands has a low mammal and bird biodiversity compared to the upland rainforest.

### Signs of Wildlife

It is easy to move through the rainforest on autopilot and miss the natural graffiti left all around you. Many animals are nocturnal and your chances of seeing them are small. Being able to read the signs they leave is to know that they're there. To teach a visitor how to read a certain sign left by an animal will enhance their

whole experience. Look for calling cards such as chewed or rubbed bark (could be a Striped Possum or feral pig), nibbled fruit (rats or birds in treetops), opened nuts (White-tailed Rat/melomys) or fresh leaflets strewn on the ground (could be parrots, cockatoos especially) or soft pellets of fruit (spat out by Flying-foxes once the juice has been sucked). Animal tracks are another giveaway, and you may be lucky enough to see the tell-tale tracks of a Lace Monitor in the sand, or the light footprints of Sandpipers along the shore. And who could forget the distinctive 'berry-pie filling' that signals a cassowary has been feeding nearby?

### Further Information

What should you do if you see injured wildlife? If the animal is dead, remove it from the road. Tour operators and residents have reported Cassowaries feeding on roadkill, so removing carcasses may save a Cassowary from a similar fate.

If it isn't a horrible sight you may wish to show the creature to your visitors. If it has a pouch check for young, but if pouch young are present, do not remove. (Tiny babies are so firmly attached to the teats in the pouch that unskilled removal can seriously injure their jaw.) Put the animal in a pillowcase (keep one in the vehicle) and notify the ranger at Cape Tribulation (phone 4098 0052) or Daintree Wildlife Rescue on 4098 9079 or mobile (0428) 736 029.

📖 Primitive Flowering Plants

📖 Flipbook for map of Gondwana

## Facts & Stats

📊 Snakes have no eyelids. The eye is covered with a transparent scale, so when the snake sheds its skin it will have a new eye scale with the new skin.

📊 Snakes have no external ear and eardrum so it is virtually deaf, but it is very sensitive to vibrations in the ground - a person walking nearby will cause alarm even if unseen. A snake-charmer's music can't influence the snake - it is only following the snake-charmer's movements.

# Marrdja Visitor Area

## *A Rainforest Walk*

*‘Type 1a represents the optimum development of rainforest in Australia under the most favourable conditions of climate and soil on the tropical humid lowlands’*

*J.G. Tracey*

An alternative spelling is ‘Madja’. The pronunciation is ‘mud-ja’ and means ‘rainforest walk’.

### History

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The Marrdja botanical walk is part of the Daintree National Park. The original walking track was built by the Queensland Environmental Protection Agency 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 1.1km loop in 1998 with funding from the Daintree Rescue Program. The walk can take 30 minutes or all day, depending upon how much time you can devote to it.

### Cassowary Notes

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An adult female cassowary is occasionally seen along the road in the Marrdja boardwalk area and although the bulk of her range is north of the road, she also forages west of the boardwalk area.

### Safety & Comfort

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⊕ Warn your visitors that midges sometimes swarm in the mangrove section of the boardwalk - insect repellent could be necessary for them to enjoy their walk (and the rest of the day).

⊕ Resist the temptation to eat rainforest fruits. Fruits and seeds eaten by birds and animals may be dangerous to humans.

⊕ Leeches shouldn't be a problem as long as visitors stay on the footpath and boardwalk. Blood-sucking leeches are the bane of the bushwalker and will climb the victim's legs and attach themselves to the first area of bare flesh, usually above the socks. During wet weather in the upland forests tiny leeches can attach themselves to the eyeball resulting in some pretty dramatic bloody tears. Pulling them off eyes is not recommended. Try bathing in a saline solution, Murine or Visine. If you don't have any handy it's best to let them have their fill, after which they will drop off. (That should be enough incentive to keep visitors on the path!)

### Interpretation

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Plants representing all the stages of the evolution of land plants over the last 400 million years are found here. Marrdja is one of the very few places where all these occur in one small area. Signs along the boardwalk tell an evolutionary story that begins with the first land plants emerging from the seas, through the age of dinosaurs to the explosion on the scene of flowering plants. The story continues through the breakup of the supercontinent Gondwana, to the coming of humans and beyond – to the rainforests of the future.

In the last 300 years more than 80% of Australia's rainforests have been cleared. This area has survived to shelter some of the few Gondwanan rainforests left on the planet. These rainforests with their unbroken Gondwanan ancestry contain a treasurehouse of untapped knowledge about how living things evolve, adapt or become extinct.

You can take your guests on a walk through time and use the trackside signs as “bookmarks” in your story, or you may wish to use the forest around you to develop your own site script. From August to November, Marrdja Boardwalk has great displays of orchids if you know where to look:

- the yellow flowers of the Golden orchid *Dendrobium discolor*
- white feathery flowers of the Pencil orchid *Dendrobium teretifolium*
- white, purple and green brushes of the Bottlebrush orchid *Dendrobium smilliae*.

They can be seen in the very tops of mangroves, particularly the Looking Glass mangroves.

# Nature Notes



Plants that grow on other plants are called **epiphytes** while plants that grow on rocks are called **lithophytes**. The commonest species of **Bird's Nest Fern**, *Asplenium nidus* which has become a popular garden plant and can be seen along the boardwalk 'in the wild', can be both an epiphyte and a lithophyte.



Another epiphyte, the **Basket Fern** *Drynaria rigidula* can form huge clumps around trees. The brown bracket or 'nest' leaves hold the plant together and trap leaf litter and moisture. It is common in the mangrove section.



Epiphytes are not parasites - they use the host tree on which they grow only to get closer to the source of light. **Strangler figs** are the biggest. Strangler figs usually begin life from bird and bat droppings deposited in the fork of a host tree. The fig sends its roots downwards towards the ground while the crown grows up to the light, the roots ultimately encasing and 'strangling' the host tree. Eventually the host tree rots away, leaving the strangler fig standing like some strangely beautiful, but living, sculpture.



Like strangler figs, **mistletoe plants** also begin life in host trees, but are parasites because they derive their nutrients from the tree itself. Mistletoes usually flower profusely, and can often be detected by a carpet of bright red/yellow/orange flowers on the ground below the host tree. The soft fruit is a favourite with the Mistletoebird and the extremely sticky seeds ensure that they remain on the branch where they were deposited in the bird's droppings.

 Glimpses of Wet Tropics Wildlife



Australia's smallest cycad, the **Zamia Fern** *Bowenia spectabilis* (up to 2m) and the world's tallest cycad, the **Zamia Palm** *Lepidozamia hopei* (up to 16m) are found along the Murrumbidgee boardwalk.

 **The Primitives**



The **Water-rat** *Hydromys chrysogaster* sometimes builds its nest near mangroves, feeding on crustaceans, fish and even young water birds. It has partly webbed feet and waterproof fur. Apart from the Platypus, the Water-rat is the only amphibious Australian mammal. It is also unusual among Australian rodents because it's not entirely nocturnal. Most activity takes place around sunset but animals may forage in full daylight.



**Iridomyrmex ants** appear out of slits in the smooth-barked trunk of many specimens of the Bumpy Satinash, *Syzygium cormiflorum*. This is one of the cauliflorous trees which bear great bunches of white shavingbrush-like flowers from the trunk, followed by pear-shaped white fruit. The ants excavate the heartwood to form galleries in which they live, and the tree appears to secrete a nutritious sap to feed them. It is unclear how the tree benefits from this association.



The colourful but well camouflaged **Boyd's Forest Dragon** *Hypsilurus boydii* is one of the most attractive reptiles endemic to the Wet Tropics. Growing to a length of half a metre (body length 15cm, the rest is tail) it has a row of large tooth-like spines running under the throat with prominent flattened scales along the back, those behind the neck being greatly enlarged. The male is slightly larger than the female and both sexes have a large yellow dewlap below their chins which can be erected to scare off predators or for display. It feeds during the day mainly on ants that walk along the tree trunk beside it, however more substantial food is found on the ground such as beetles, spiders, crickets, snails and earthworms. It relies on its mottled camouflage and staying very still to fool its prey and to escape predators. It is quite easy to walk past a 'frozen' Boyd's Forest Dragon at eye level without noticing it! Stormy weather in December will encourage mating and egg-laying. Mating attempts have been observed on the forest floor with the larger male giving no attention to decorous behaviour. Females scratch a surprisingly shallow hole in soft earth, about 10cm in depth, to deposit three to four eggs.



Flipbook for Boyd's Forest Dragon

**Long-tailed Pygmy-possums** *Cercartetus caudatus* have been seen during night walks feeding on nectar from the flowers of the Bumpy Satinash. It is nocturnal and mainly arboreal (moves about in the trees) climbing with the aid of a long prehensile tail. The black patches around the eyes gives the impression it has been up all day!



Visitors walking through the mangrove section of Murrumbidgee boardwalk will often hear the calls of the **Bridled Honeyeater** as it searches for insects and nectar. Taking its name from the yellow 'bridle' extending from its bill to its ears, Bridled Honeyeaters will often forage in small bands of up to a dozen or so birds.





## Plant Calendar



Bumpy Satinash  
*Syzygium cormiflorum*

**Bumpy Satinash** *Syzygium cormiflorum* has fruit September to January. The flesh is edible but insipid. Maybe that's why Aborigines call it *wada* (water) apple. The flowers and fruit are eaten by cassowaries.

A rare plant **Gardenia actinocarpa** is common near parts of Murrumbidgee boardwalk. The Noah-Oliver Creek area is the only known home of this plant. Male and female trees are separate, requiring pollen to be carried from one tree to another, with relatively few female trees, perhaps only one to every six male trees. The white, strongly scented flowers appear in the spring. What few fruit are produced seem to be too large for animals other than the cassowary to disperse, however Dick Eussen reports seeing the **Victoria's Riflebird** eating the ripe flesh. Keep an eye out for the male Riflebird which occasionally displays from dead trees in open areas along the Murrumbidgee track or at the carpark.

 Flipbook for *Gardenia actinocarpa*



Victoria's Riflebird  
*Ptiloris victoriae*

## Have you been asked...

### *What bird call is that?*

**A:** Birds are rarely seen but often heard on the Murrumbidgee boardwalk. They include the Little Shrike-thrush, Crimson Rosella, King Parrot, Orange-footed Scrubfowl, Shining Flycatcher, Cicadabird, Black Butcherbird, Large-billed Warbler, Shining Starling, Spangled Drongo, Buff-breasted Paradise Kingfisher, Little Kingfisher, Victoria's Riflebird, Wompoo Fruit-dove, Spotted Catbird and the Sulphur-crested Cockatoo which nests in a hollow in the big Cassowary Satinash. Cicadas are often heard 'singing' persistently, a sound produced from drum-like organs on either side of the male's abdomen. Eggs are laid in slits in branches and when they hatch the wingless young drop to the ground, then burrow into the ground until maturity (up to 17 years later, but usually 18-21 months). Discarded skins on trees are evidence that young cicadas have emerged.

### *Why is the soil disturbed?*

**A:** Some areas are badly damaged by feral pigs. There is even pig activity in the mangroves. The pigs dig up the soft, moist soil looking for their favourite meal - worms. Their insatiable appetites are responsible for the badly eroded areas where the only protected mounds are held together by existing vegetation, such as wait-a-while clumps.

## Derivations

**Zamia Palm** *Lepidozamia hopei*

*Lepidozamia* = *lepid*, scale, refers to the scale-like coverings on the seeds as they sit in the cone + *zamia*, a genus of Central and South America.

**Zamia Fern** *Bowenia spectabilis*

*Bowenia* = Sir George Bowen.

*spectabilis* = Latin *spectare*, to behold, visible, notable

**Gardenia actinocarpa**

*Gardenia* = Alexander Garden, missionary, 1730-1791.

*actinocarpa* = *actino*, ray-like, referring to the shape of the fruit + Greek, *carpos*, fruit.

**Water-rat** *Hydromys chrysogaster*

*Hydromys* = *hydro* water + *mys*, *mus* mouse.

*chrysogaster* = Greek *khrosos* gold + *gaster* the stomach. Refers to the belly of the water-rat.

## Further Information

 Maps

 Primitive Flowering Plants

 The Primitives



# Noah Range


The coastline here is a meeting place of two World Heritage Areas, the Wet Tropics and the Great Barrier Reef.

## History

In 1770 Lt James Cook sailed HMS Endeavour northwards from Botany Bay, charting the coastline. He had sailed inshore of the Great Barrier Reef for more than 1000km until, despite 'heaving the lead' continuously to sound the depth, the Endeavour 'struck and stuck fast' on a small coral reef. He gave the nearest point 40km to the south-west the unforgettable name of Cape Tribulation and wrote in his diary 'here began all our troubles.' Other names given by Cook, such as Weary Bay and Mt Sorrow reflect his mood at the time. Fortunately, expert seamanship, continuous pumping and jettisoning of heavy equipment such as top masts, ballast and guns, saved the ship. After four days of limping along with a sail covering the hole in the ship's bottom, Cook finally edged into the mouth of the Endeavour River where Cooktown now lies. The ship remained there for two months, the longest period ashore in Australia, while repairs were carried out. This was where the crew saw their first kangaroo (called 'ganguru' by the Yimidirr of Cooktown) and also the first fruit bat, which was described as a devil as large as a one-gallon keg with horns and wings! Some of the plant specimens collected by naturalists Joseph Banks and Daniel Solander while the Endeavour was being repaired can be seen at CSIRO Atherton Plant Division today - looking just as they did when dried and pressed over 200 years ago.

 Flipbook for map of Cook's voyage

## Safety & Comfort

 This section of the road passes through the Daintree National Park once again. The road is steep and will require driver concentration. You can pull over in the turn-outs provided to allow your passengers to photograph the views. The first turn-out provides a view of Undine Reef with its tiny sand cay - the second provides a view of the prominent headland of Cape Tribulation. The trees growing down the steep incline from the road to the sea were severely battered by Cyclone Rona in 1999. The degree of regeneration since then has been amazing.

## Have you been asked ...

### *Is that vine a weed?*

**A:** The often rampant vine with the heart-shaped leaves seen climbing over many of the trees on the range section is called Captain Cook Vine *Merremia peltata*. Although a native, in situations such as this where its quest for light takes it to the top of trees, it becomes an unwelcome burden for the trees.

## Derivations

**Captain Cook Vine** *Merremia peltata*  
*Merremia* = Blasius Merrem 1761-1804, German Professor of Physics who wrote on birds and amphibians.

## Nature Notes

A little south of the range the forest is quite different. There are eucalypts here, mainly **Red Stringybark**, also the **Paperbark Mahogany** and some **casuarina**. What happened here in the past to allow these species to grow? It could have been fire or cyclone damage which reduced the shadiness of a rainforest, so allowing open forest species to invade. Rainforest species are now once more growing in the understorey, suggesting that rainforest will in time dominate this site once again.

Coastal freshwater swamps are home to the **Narrow-leaf Paperbarks** *Melaleuca leucadendra* which grow along and just behind the beachfront where they tap into the groundwater supplied by mountain streams. Often growing to 30m high, their thick layers of paperbark protect them from fire which helps to open their woody seed capsules.

Vegetation on the range changes to pioneer species such as the **wattles** *Acacia spp.*, probably here due to fire and exposure to the elements on the headland.

*peltata* = Latin *pelta*, shield - of leaves where the stalk is attached to the leaf inside the margin (leaf-edge).

## Further Information

Read *The Northern Approaches, Australia in Old Maps from 820 to 1770* by Eric B. Whitehouse, Boolarong Press 1994

Read *The Life of Captain James Cook* by J.C. Beaglehole, A & C Black, London 1974

Read *Captain James Cook* by R. Hough, Hodder & Stoughton 1994



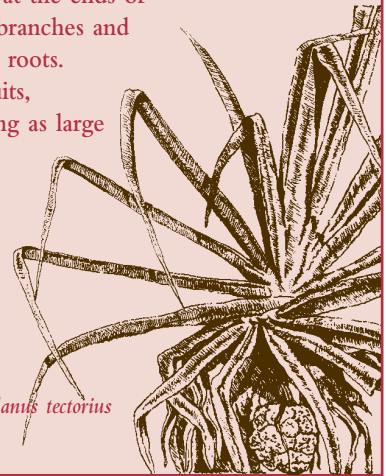
## Plant Calendar

**Scrub Breadfruit** *Pandanus monticola* is one of several pandanus species found in the rainforest. Flowers are produced on separate male and female plants. The prickly fruit which appears January through to September is edible but may irritate the mouth and throat. Small rodents sit on the fruit, while fastidiously nibbling the best parts of each spiny segment.

**Beach Pandan** *Pandanus tectorius* is more commonly seen along coastlines, rainforest margins, along waterways and in open sites.

This distinctive tree bears tufted crowns of sword-like leaves at the ends of slender, crooked branches and has stilt-like prop roots.

Pineapple-like fruits, sometimes growing as large as a human head, disintegrate into segments when mature.



Beach Pandan *Pandanus tectorius*

# Where the Rainforest Meets the Reef

## South Myall Beach

The dictionary gives the meaning of Myall as “an Aboriginal living in a traditional way”. Myall Beach may have been named after Aborigines camping south of Dubuji when early settlers lived at Cape Tribulation.

### General Notes

Some of the flooring timber used in the Coconut Beach Resort built in 1990 is cut from a native rainforest tree called Kwila *Intsia bijuga* which also grows in Pacific islands, Malesia (a botanical geographical region which includes the area from the Bismark Archipelago and New Guinea through Indonesia to Malaysia and the Philippines), South East Asia, India and Indian Ocean islands. There is a smallish Kwila in the middle of the road a little south of Coconut Beach Resort.

A little further on, to the west of the road in rainforest owned by the resort, a canopy crane has been installed. The crane, managed by the Cooperative Research Centre for Tropical Rainforest Ecology and Management (CRC-TREM), has a height of 47m and a length of 55m, and can pivot 360 deg. A three-person gondola can be lowered through the trees providing access to a three dimensional space of almost one hectare of rainforest canopy. This facility is for Australian and international scientists to carry out research at canopy height in lowland rainforest.

### History

According to Paul Mason, owner of the Cape Trib Store, the first person to drive into Cape Tribulation was 18-year-old Marion Swenson in an old bren gun carrier. She had to drive from the foot of Noah Range along Myall Beach, across the mouth of Myall Creek and up a track to where the Cape Trib Store is now. In 1963 the Douglas Shire Council hired a dozer to finish the short section of road from the foot of the Noah Range to Cape Tribulation.

### Safety & Comfort

Stonefish have spines on the dorsal fin and poison sacs lying at each side on the base of the spines. Pain is instantaneous and excruciating and victims are likely to become frantic and delirious. Few fish blend better with

their backgrounds than stonefish and the animals are reluctant to move even when bumped by reef walkers. Apply hot water (about 50 deg.) to stonefish stings which can relieve pain and neutralise some venom. Seek medical attention.

Useful extras for emergency numbers

### Have you been asked ...

*Why does the reef close to the beach look dead?*

**A:** Photographs of the fringing reef taken in the 1920s and 1930s show a very different reef, with lots of corals that survived exposure at low tide. Research suggests nutrient runoff from broadscale agriculture south of the Daintree River over the past 70 years may be responsible for the growth of algae which has smothered some of the reef. Coral growth can still be seen on the seaward edge of the fringing reef.

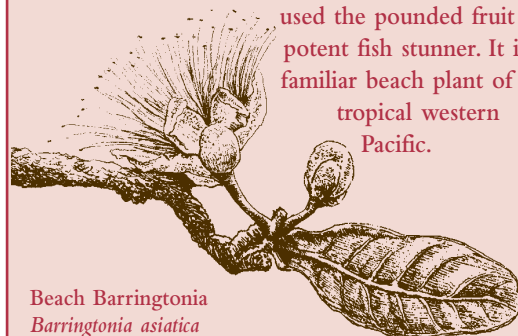


### Plant Calendar

There is a **Beach Barringtonia**

*Barringtonia asiatica* framing the view of the fringing reef before the Coconut Beach Resort sign. During the warmer months its large striking flowers (up to 15cm across) open at sunset revealing a mass of beautiful stamens, white below, pink above.

Pollination by bats and moths occurs at night. The large, buoyant four-angled fruit attracts the attention of visitors as part of the flotsam on the beach. The natural range is difficult to determine as it may have been distributed by native peoples who have long used the pounded fruit as a potent fish stunner. It is a familiar beach plant of the tropical western Pacific.



Beach Barringtonia  
*Barringtonia asiatica*

# Nature Notes



**Fringing reefs** are coral structures which develop close to the mainland or to continental islands and are probably the reef type most commonly seen by visitors. Fringing reefs also extend much further south than the outer reefs and can be found right down to Coffs Harbour in New South Wales. Creeks swelled by wet season rains often inundate fringing reefs with freshwater and silt. Under natural conditions reefs can cope, but sediment run-off from the land in the form of agricultural fertilisers and sewage have adverse effects on reefs. Because fringing reefs are often the most accessible to visitors, they are also the most vulnerable to human activities.



**Beach calophyllums** *Calophyllum inophyllum* are found near the beach, their branches stretching over the high tide mark. The green exterior of their round fruit is gnawed by fruit bats, and can be nibbled by humans, but the contents are toxic.



The fine branches of **Casuarinas** *Casuarina equisetifolia* also overhang the beach. The leaves of casuarinas are reduced to tiny scales pressed against the 'needles' which are in fact the leaf-bearing twigs of the tree. Close examination of a needle will show a whorl of four to eight scales at intervals along each needle. Their small spiky cones are painful to walk on in bare feet. There is a story that missionaries in Hawaii planted casuarinas there to encourage the locals to wear shoes!



**Coconut palms** *Cocos nucifera* depict the typical tropical image of the coconut fringed beach. They are not considered to be native because early travellers did not see any and they did not become established on the mainland until after European settlement. They are rapidly overtaking the native foreshore vegetation and in 2004 the Douglas Shire Council was in the process of developing a management plan for the control of coconuts.

## Derivations

### **Casuarina** *Casuarina equisetifolia*

*Casuarina* = Latin *casuarius*, the cassowary, refers to the branches resembling the bird's feathers.

*equisetifolia* = Latin *equis*, horse + *folia*, leaf. Refers to horse's mane or tail.

### **Beach Barringtonia** *Barringtonia asiatica*

*Barringtonia* = Daines Barrington 1727-1800, English jurist and naturalist.

*asiatica* = of asia.

### **Coconut palm** *Cocos nucifera*

*Cocos* = Portuguese *coco*, means grimace, in reference to the three holes which look like a face.

### **Beach Calophyllum** *Calophyllum inophyllum*

*Calophyllum* = *calli*, beautiful + *phyllum*, leaf.

## Further Information

A great book to have on board for children is *Where the Forest Meets the Sea* by Jeannie Baker.

For more details on the canopy crane talk to the Canopy Crane Project Officer at CRC-TREM phone 4042 1252.

Read *Ecological Indicators of Large Scale Eutrophication in the Great Barrier Reef Lagoon* in 'Ambio' vol.24 no.4 1995



# Cape Tribulation Village

Cape Tribulation looks very different to when Cook passed by.

In addition to many private residences, the village offers a variety of accommodation, take-away food, shops, rainforest walks, reef tours and a research centre.

## History

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By 1932 early settlers had begun to clear the land around Cape Tribulation with axes and cross-cut saws for crops such as bananas, pineapples and tomatoes. Produce was rowed out to a boat which called in on its way from Cooktown to Cairns. The valley between Cape Tribulation and Noah Head was surveyed under a Group Settlement Plan and split into six blocks, one for each of the families which had moved there. Slowly the settlers paid off the surveying fees and acquired the title deeds to the land.

The only transport in the area was by horseback or in horse-drawn carts. Those who could not afford horses transported their produce by hand in wheelbarrows. The horses and a few head of cattle had been walked down from the Bloomfield River area. The first car to be seen in Cape Tribulation arrived in pieces by the Hayles ferry. This was in 1937 before roads were built. Hayles ferry operated between Cairns and Cooktown and would stop at Cape Tribulation.

During the war years (1939-1945) large amounts of produce were grown for the army, using land-army girls as farmhands when original settlers were called away to the war. After the war the market for fruit and vegetables collapsed so by 1948 a small sawmill had opened, employing a maximum of five people in the dry season. Most of the timber cut was Northern Silky Oak *Cardwellia sublimis* which was towed to Port Douglas on a barge. The last timber was milled in 1962, the same year the road was cut over the Noah Range (at a cost of 600 pounds).

The Mason family were the first settlers in the Cape Tribulation area and by 1958 were operating under the name of 'Valley Farming Company'. In 1974 the Mann family leased a building from the Masons and opened a shop when the first trickle of tourists started arriving. When the Mann family left in 1978, local residents (about 25) asked Paul Mason to keep the store open for a trial period of three months and it has been open ever since. In 2002 the Masons built a new store closer to the road. The trees growing near the store are Blue Quandongs planted by the Mason family in 1986 for timber and revegetation.

The Mason family allow swimming in their private swimming hole in Myall Creek from 8.30am to 5pm, subject to acceptable behaviour.

## Hippies

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Hippies were part of the scene in the 1960s and 1970s. Ranger Hans Nieuwenhuizen recalls many of these people were well-educated and had 'dropped out' of society to form their own alternative communities. There was a lot of movement between the Cape Tribulation camps and the main communes further up the coast at Cedar Bay. People 'commuted' by boat. Most of Cape Tribulation's beach camps were semi-permanent but there were some quite permanent abodes with flagstone flooring and tin-drum ovens. People were friendly, inviting passers-by for cups of tea. The beach was once part of the track to Bloomfield, and older vehicles were often left abandoned where they stopped. Nine of the vehicles were used by concerned locals to block access to the beach to stop the car dumping. Customs and Police eventually removed the hippies from Cedar Bay and in 1981 the Cape Tribulation National Park was declared, stopping any further camps on the beach.

## The Bloomfield Blockade

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According to Paul Mason the first track from Cape Tribulation to the Bloomfield River was bulldozed in 1968 by the Cape Tribulation and Bailey's Creek Development League. Much of the track traversed Timber Reserve and Paul describes the first trip as 'a hair-raising ride'. He remembers four people rode on the bonnet at Donovan Point to get some traction on the front wheels because the track was so steep.

In 1976 the track was bulldozed by the Southedge Daintree Pastoral Company, again without survey but without too much damage, the bulldozer dodging trees if they were too large. The intention was to walk cattle from Starcke Station, but there are no records of this having been done. By 1979 the Council had officially gazetted the track, although it had become impassable to traffic and there seemed to be some doubt as to its exact location on the map.

In 1983 the Council authorised bulldozers to re-open the track as part of a Bicentennial Project. By this stage it had become a favourite walking track for hundreds of Australian and overseas visitors and about two thirds of the route fell within the newly gazetted Cape Tribulation National Park. Conservationists from around Australia gathered to obstruct the bulldozers and the site of the final blockade can still be pointed out a little north of Cape Trib Beach House, beyond Cape Tribulation village. The passion of conservationists who buried themselves in the path of bulldozers and chained themselves to trees in an effort to prevent further destruction to this wilderness area and subsequent media coverage of the dispute, made Cape Tribulation a household name throughout Australia and the world.

Despite the blockade and continued protests, the bulldozers resumed after the wet season the following year and the road now links Cape Tribulation to Cooktown. The section between Cape Tribulation and the Bloomfield River is a four-wheel-drive track. Called 'the Bloomfield Track' it has several steep climbs, descents and creek crossings and is often closed after heavy rain. Although conservationists lost in their efforts to stop the road to Bloomfield their efforts served to bring attention to the Daintree rainforests which influenced political thinking and the decision for World Heritage listing.

Lloyd Nielsen in his book *Daintree - Jewel of Tropical North Queensland* sums up the blockade story with: 'Ironically, Mike Berwick, who was the elected spokesperson for the protesters at the blockade, was elected Chairman of the Douglas Shire Council in 1991.' By 2004, Mike had served as mayor for 12 years.

## Safety & Comfort

⊕ A lot can be said for having hairy legs in the stinger season. Women who shave their legs and children who have not yet grown hair on their lower limbs can not only suffer more severe Box Jellyfish *Chironex fleckeri* stings than their hairy counterparts, but also are more likely to die from them. Marine stingers occur in tropical waters along Australia's northern shores from Broome to Gladstone from November through to May.

## Facts & Stats

📊 Annual number of visitors to Cape Tribulation is about 360,000.

📊 Daintree National Park was first gazetted in 1962. Today the total area of the Daintree National Park is 76,000 hectares. The Cape Tribulation section of the Daintree National Park was gazetted in 1981 and in 1994 all sections (including Mossman Gorge, Dagmar Range, West Daintree and Alexandra Range) were combined and called 'Daintree National Park'.

Although they might look dead when washed up on the beach, the tentacles are still active.

⊕ Public toilets are at Dubuji and Kulki Visitor Areas.

## Local Lore

Lawrence Mason reports being called from the Store one hot day by visitors who had discovered a Green Turtle stranded on the fringing reef along Myall Beach. 'The poor thing was baking in the midday sun, stuck high and dry on a lump of coral, and couldn't get back into the water' Lawrence recalls. Used to handling heavy machinery on the farm, he carefully lifted it off and carried it into deeper water where it swam away 'very smartly'. Other turtle species commonly found on the reef are the Loggerhead and the Hawksbill.

## Further Information

Across the road from the Dubuji Visitor Area is the Cape Tribulation Environmental Centre, the "Bat House". Here visitors can learn about the complexities of the rainforest and reef, meet a tame flying-fox and learn about research being carried out at the Cape Tribulation Tropical Research Station. Staff can help with natural history queries.

Read W. Mason's *Kurangee*, Pinevale Publications 1993

Read M. Mason's *Living in the Rainforest*, Ingham 1996

Read *Coasting* by Dirk Flinthart, Duffy & Snellgrove NSW 1996 for an outrageously honest opinion of the area.

History of the Wet Tropics Campaign by Mary Burg at [www.cafnec.org.au](http://www.cafnec.org.au)

# Dubuji Visitor Area

*'Dubuji means 'place of spirits' and is pronounced 'doo-bi-gee'.*

## History

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The Dubuji Visitor Area has had an interesting history since colonisation. The forests were selectively logged for cabinet timbers in the 1940-50s by Cape Tribulation's pioneer family, the Masons. 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 and 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 recent years cattle and horses grazed here, and there were old tracks and fences in the boardwalk area. The Daintree Rescue Program purchased the 28 hectare "Camelot" block in 1996. Two years and 12,000 trees later, the Dubuji site was open to visitors. It has an extensive picnic area with covered tables for larger groups, free gas barbecues, three toilet blocks and an information shelter. There is a 1.2km boardwalk and a short walking track to Myall Beach.

## Rare Rainforest

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With widescale clearing of north Queensland's rainforests over the last hundred years, 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.

Another main feature of Dubuji are the creeks which are fed by springs rising where the watertable meets the coastal sands. (The largest spring rises just behind the information shelter.) The presence of creeks, swamps and mangroves alongside the rainforest means that Dubuji shelters an enormous variety of land and water based plants and animals.

Even though Dubuji's forests harbour some rare and ancient plants, the forests only colonised this old beach area in the last two to three thousand years. Buried just under the surface are corals of once fringing reefs.

## The Boardwalk

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Because of the area's sensitivity, the Daintree Rescue Program funded the construction of a boardwalk to minimise visitor impacts on the surrounding vegetation. Local residents, Kuku Yalanji community rangers, Green Corps workers and overseas volunteers worked on the 1.2km boardwalk for almost a year. The crew painstakingly transplanted hundreds of plants from the proposed boardwalk area, and wound the track around large trees. Instead of cutting plants to suit the boardwalk, they cut the boardwalk to suit the plants.

The boardwalk had its own folklore for the workers - one waterway overgrown with sedges and pandanus was called "gumboot creek" because one of the supervisors was always falling in and filling up his gumboots with water. Thanks to these workers, visitors don't have to wade through water or struggle through the spiky sedges which line the creeks.

## Interpreting the site

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Trackside signs emphasise some of the obvious features of the forest such as the fan palms, sedge swamps and mangroves. If you have time, allow your guests to browse through the displays in the information shelter to get a different perspective of the site's history, the local community and its conservation efforts.

## After the storm

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One of the obvious interpretive features of the Dubuji boardwalk are the after effects of Cyclone Rona which crossed the Daintree Coast in February 1999. Turbulent winds brought down large trees and flattened the sedge and pandanus growing in the swampy areas. In several places the roots of fallen trees lifted the boardwalk from its foundations and fallen branches and leaves literally buried the boardwalk. Within a week or two, cleanup crews had cleared most of the major tree falls from the track. This included some careful repositioning of dislodged vines. Most of the debris has

been left on the forest floor as part of the important nutrient recycling process. Rangers will be monitoring this recycling process, together with how the rainforest recovers after such events.

Cyclones are a fact of life in the Wet Tropics. Developing in the Coral Sea, they regularly hit the coast with winds of up to 200km/hr. Usually the canopy suffers the most damage, copping the full force of the winds while sheltering plants below. Increased light through the damaged canopy stimulates the growth of pioneer species and waiting understorey trees and shrubs. Leaves shoot from the trunks and branches of damaged trees and the forest begins to repair itself. In summary, while some parts of the forest have sustained significant damage, others have suffered minimal damage and species diversity has not been lost. Even the hardest hit areas will recover with time. Despite the initial shock at the sight of localised damage, cyclones do not clear the forest floor the way a bulldozer does. Whole forests of small seedlings remain intact and will quickly push up through the debris to grow into giants of the future.

## Safety & Comfort

⊕ The boardwalk loop has been designed for one-way traffic starting near the carpark and finishing near the beach. Encourage your guests to follow this pattern so that your group doesn't disrupt other visitors.

⊕ Areas of the track have been widened so that groups can stop to discuss features, allowing other visitors to pass by. Take advantage of these sections and don't be tempted to step off the boardwalk.

⊕ Visitors feeding wildlife can cause problems. Lace Monitors now identify people as a source of food scraps and behave unnaturally. Their normal shyness has been replaced by bold, sometimes intimidatory action where they 'rush' people, climb onto picnic tables and enter tents in search of food. At a local resort there have been two instances where monitors have inflicted serious wounds on visitors. Feeding animals such as monitors or Black Butcherbirds has resulted in large numbers of these predators frequenting public areas, placing a heavy predatory burden on smaller birds and other animals.

⊕ The small local staff of the Parks and Wildlife Service count on tour operators and visitors to help maintain and manage the site. Keep your visitors on the boardwalk, and clean up the picnic and barbecue areas for those who will come after you.

## Facts & Stats

Listen for the calls of the **Orange-footed Scrubfowl** as you pass by the mound area.

☒ With their big feet they rake up huge mounds of soil and vegetable matter up to 4m high and 30m around, in which they lay their eggs. Just like your backyard compost heap, the rotting vegetation produces heat which incubates the eggs.

☒ Orange-footed Scrubfowl probably mate for life - both males and females share in building and maintaining the mounds which are used for years.

☒ At the beginning of a new breeding season, the mound is 'spruced up' with new material on the top, and several pairs will often use the same mound, but not at the same time.

☒ Before laying, many test holes are dug, sloping into the mound one to two metres, the birds thrusting their heads into the bottom of the mound to check on conditions and temperature. Once the temperature reaches 29-35 deg., egg laying commences.

☒ The chicks develop to an advanced state inside the eggs, hatch inside the mound and struggle to the surface through as much as one metre of earth and debris. Completely independent upon hatching (although exhausted and in need of several hours rest), they are never tended by their parents.

☒ Although the Orange-footed Scrubfowl is the smallest of Australia's three mound-builders, it builds the largest mound. The other two are the Australian Brush-turkey, (coastal eastern Australia, including rainforest) and the Malleefowl (dry inland, southern Australian coast).


## Cassowary Notes

The boardwalk construction crew reported being watched by a young cassowary for about 20 minutes. This was the first time a cassowary has been sighted in this 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.



# Nature Notes

In the mangrove section, you may see Little Kingfishers or hear their piping call as they speed along the creek lines. Flycatchers also call along the creek and sometimes there are four or five species of honeyeaters in one tree.

 Dubuji is a great place to look for a wide array of fungi varying in size, shape and colour. These workhorses of the forest break down fallen plant material so that nutrients can be released and taken up by living plants and animals. The digestive organs of fungi are grey or white thread-like filaments. For most of their lives, fungi remain hidden inside rotting wood or in the soil, only making a cameo appearance when it is time to reproduce. Then they are revealed in all their colour and form, ranging from the traditional toadstool to fungi which 'glow in the dark'. This is called bioluminescence and is caused by a chemical in the fungus reacting to oxygen (just like fireflies).

Despite first appearances **Balanophoras** are not fungi - although their species name 'fungosa' means fungus-like. They are actually flowering plants which live underground as root parasites. They send up reproductive shoots in the winter months. Because these plants need no chlorophyll the few leaves on their above ground shoots are not green but creamy white. The bulb-like head of the shoot is a mass of minute female flowers. Small globular male flowers can be seen on a lower portion of the stem.

## Flipbook for **Balanophora**

There are several spots where black palms *Normanbya normanbyi* are closely clustered - look for their creamy yellow flowers and large pink fruit. They may be grouped closely together because there have been no visiting cassowaries to eat the

fruit and disperse the seeds over a wider area. Now the cassowary is back, perhaps they will spread further through the forest.



Red-brown **Matchbox Beans** *Entada phaseoloides* are often picked up from the flotsam on the beach. They originate in large pods up to 120cm long which look like giant snow peas growing on the vine. The beans were used by early settlers as ornamental boxes to hold their wax matches.



The **Pandanus Stick Insect** *Megacrania sp.* may be seen along the boardwalk. It is also called the Peppermint Stick Insect. Measuring up to 15cm, 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. The Insect Farm at Garradunga reports that the white liquid which spurts out can cause skin irritation and even temporary blindness. The Parks and Wildlife Service is also concerned that constant disturbance by curious visitors could threaten the Dubuji population. The act of 'spraying' is a defensive measure and is very strenuous for the insect.

Prior to Cyclone Rona park rangers were pleased to spot a pair of Crested Hawks (now called Pacific Bazas) nesting in Dubuji. In spring these birds perform spectacular courtship displays with aerial tumbling high above their breeding territory. They are Australia's only crested hawk. Normally quiet and unobtrusive, they feed mainly on insects from the foliage of trees, as well as frogs and small reptiles.

## Derivations

### **Lace Monitor** *Varanus varius*

*Varanus* = Latin, refers to spiky scales on tail.  
*varius* = coloured, spotted

### **Orange-footed Scrubfowl** *Megapodius reinwardt*

*Megapodius* = *Mega*, big + *podius*, foot.

### **Pandanus or Peppermint Stick Insect**

*Megacrania sp.*

*Megacrania* = *mega*, big + *crania*, head

### **Matchbox Bean** *Entada phaseoloides*

*Entada* = Malabar name (in southern India)  
*phaseoloides* = phaselos, a bean

## Have you been asked ...

### *What makes the little balls of sand on the beach?*

**A:** A common feature of sandy tropical beaches are little holes surrounded by balls of sand arranged in piles or radiating lines. Each is the work of a crab, sometimes known as the Sand Bubbler Crab, which emerges from its vertical burrow between tides to feed on the layer of organic material left on the sand surface. It scoops up portions of sand and rolls them around in its mouth cavity where nutrient particles are stripped off by special hairs. The remains are then pushed out of the entrance of the holes as little balls.

# Kulki Visitor Area

*'The Greater Daintree region is the most beautiful of its kind in Australia. Time will heal the scars inflicted upon this wilderness. We are more than rich enough and secure enough to protect this land. We have a duty not to debase the world.'*

*Rupert Russell*

*Daintree: Where the Rainforest Meets the Reef, 1985*

Kulki is the traditional name for the Cape Tribulation area and is pronounced 'gool-kee'.

## History

Historical records show the Cape was once covered in Moreton Bay Ash *Eucalyptus tessellaris* and Kangaroo Grass. This suggests the area may have been regularly burned by the traditional owners. In the 1930s the Masons ran a herd of goats on the headland, and cattle were still grazing there in the mid-1970s. Since then, rainforest has encroached into the other vegetation. Cyclone Rona in 1999 damaged many rainforest trees, leaving the more resistant eucalypts showing through.

The beach area used to be a nudist beach and 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.

Kulki Visitor Area was opened in 1988 and was upgraded in 1997 with funds from the Daintree Rescue Program. Although it is a small visitor site compared with Dubuji and Jindalba and tends to become crowded at peak times, it offers quick access to the beach. A short walk leads to a lookout on the Cape with breathtaking views of the coastal mountains. Another short track leads from the carpark over the headland to the northern end of Myall Beach.

## Interpreting the site

Cape Tribulation has become an icon to many people. It was near the beginning of Captain James Cook's troubles, a symbol for the long and unfinished fight to protect Australia's wet tropical rainforests, and a playground for the people who come to stay here. With rainforest sweeping down to the beach and fringing reef just offshore, this is an excellent spot to remind your guests that this is where two World Heritage Areas lie side by side.

## Facts & Stats

There are two main types of jellyfish stings suffered by bathers in north Queensland. The sting of the box jellyfish *Chironex fleckeri* leaves big welt marks and immediately causes severe pain, sometimes resulting in death within three minutes. There have been over 70 recorded fatal jellyfish stings on north Queensland beaches since 1884.

Bathers also experience stings which initially result in only a mild irritation and leave no mark. Thirty minutes later the victims experience severe pain, abdominal cramps, nausea, vomiting, headaches, severe back pain and a feeling of impending doom. Together, these symptoms are referred to as "Irukandji Syndrome". Eccentric local doctor Jack Barnes named the condition after an Aboriginal tribe from the Cairns area. In 1964 Dr Barnes stung himself, his young son and a lifeguard while studying the syndrome - luckily all survived. The thumbnail-sized jellyfish was later named *Carukia barnesi*. It is now believed that at least six different species of jellyfish can cause Irukandji Syndrome, with cases reported from the Tropic of Capricorn to the Torres Strait generally between November and May. The summer of 2001 was particularly bad, when northerly breezes swept the jellyfish onto the coast. Over 200 people were stung and two people died. The jellyfish are virtually impossible to see in the water. They **do not** attack or bite; bathers typically blunder into them.

☒ In late summer the adult Box Jellyfish spawn in estuaries and then die. The young jellyfish polyps spend the winter attached to rocks and in spring migrate downriver to the sea where, feeding on shrimps, they grow rapidly to dangerous sizes. They can develop more than 60 tentacles up to two metres long. The life cycle of *C. barnesi* is unknown.

For more information see the Reef CRC website: [www.reef.crc.org.au](http://www.reef.crc.org.au)



# Nature Notes



Female **Golden Orb-weavers** *Nephila maculata* are often seen from the boardwalk leading to the composting toilets. They are the largest spiders to construct geometrical snares. Small birds sometimes become entangled in them. Certain tribes of the Pacific Islands and New Guinea use the strong snares to make fishing scoops. The female of this species can measure up to 45mm in body length whereas the tiny male with a body length of only 6mm is often mistaken for a baby spider. Despite the female's size and appearance, they are not unaggressive toward humans. The web serves many purposes – it is home to the spider 24 hours a day, a snare and a waste disposal site. It is also home for the tiny Quicksilver Spiders which have abandoned snare-making and live with the Golden Orb-Weaver. This arrangement serves both spiders extremely well, for the *Nephila* supplies the tiny spiders with an abundance of insect prey too small for itself, while the Quicksilver Spiders keep the host's web clean. After mating the female Golden Orb-weaver wraps her single egg sac in a mass of soft golden silk. This is usually well hidden within a curled leaf or a curled portion of flaking bark within

a metre of the snare. A local resident has also reported seeing a female lay eggs in a lined chamber in the ground.



The **Cairns Birdwing Butterfly** *Ornithoptera priamus* is a large butterfly regularly seen in the area. The male is green with black stripes and the larger female (Australia's largest butterfly with a wing span of up to 20cm) is black and white with yellow markings on the hindwings.



**Mudskippers** live only in tropical mangroves and are specially adapted to alternating periods of exposure to air and submersion. Although their skeletons and muscles are adapted for walking over the mud, they can also swim and breathe under water like other fish. Their 'pop-up' eyes are protected from drying out by a special transparent skin which has to be moistened in pools of water in the eye socket from time to time. They are sometimes seen at the southern corner of the beach at low tide.

Among the foreshore debris are hints to help you identify trees along the walk to the lookout. See if you can spot the flattened pods of the Kwila *Intsia bijuga* which look similar to the Matchbox Bean. The distinctive round yellow fruit of the Brown Gardenia *Randia fitzalanii* are also found in the flotsam. They are about the size of a small orange. Another rainforest tree often found near coastal mangrove areas is *Pongamia pinnata*. Its pods encase toxic seeds and can also be found along the foreshore.

Viewers sitting at the lookout have reported a pair of white-bellied sea eagles soaring high over the water on upturned wings as they hunt for fish. Huge manta rays have also been seen from the lookout, gracefully gliding underwater in search of plankton.

## Safety and Comfort

⊕ It is possible to walk from Myall Beach (south of the Cape Tribulation headland) to Cape Tribulation beach and on to Emmagen Creek but because of rocks south of Emmagen beach and tidal creeks, the four hour return trip is best done on the outgoing tide. Recommend that your guests get directions from the local rangers or staff at the Bat House beforehand.

⊕ The beach, reef and coastal waters are protected as Marine Park (no collecting shells, seeds, etc.)

⊕ Remind your guests to place only organic matter down the composting toilets and close the lid after use.

## North of Cape Tribulation

There are no toilet or day use facilities north of Kulki, so if you are heading north make sure you warn your guests to take full advantage of the facilities here. There are growing problems with visitors using any available clearing or creek crossing as a toilet site. This is not only extremely unattractive to other visitors, but leads to serious environmental pollution. Concerns have been raised by traditional Aboriginal owners that it also desecrates their cultural sites. There is a small cafe and public toilets at the Wujal Wujal Aboriginal Community north of the Bloomfield River and more toilets at Ayton.

The road north has some steep gradients and rocky creek crossings, and is often closed during the wet season. Try to minimise environmental impacts by driving sensibly. Explain to your guests that while driving repeatedly and at high speed through creeks may be fun, it damages the creek banks, aquatic systems and the fringing reefs.

Permits are required from the Department of Natural Resources and Mines if you wish to leave the road. If you wish to visit Roaring Meg and Bloomfield Falls, permission is required of the traditional owners through the Cape York Land Council, Wujal Wujal Community Council or the Burngu organisation at China Camp. If you wish to drive from China Camp to Roaring Meg you will also need a permit from QPWS Atherton.



### 3. *Why so much fuss about plants and biodiversity?*

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*3. Why so much fuss about plants and biodiversity?*



# The Most Important Lowland Rainforest

The lowlands of the Daintree Coast represent a range of forest types which elsewhere have largely been destroyed. Introduce your visitors to some of the structures and processes which occur here.

Rainforests attain their peak development as complex mesophyll vine forests on the very wet and wet lowlands and foothills where parent materials range from basalts, basic volcanics and riverine alluvia. These communities exhibit an uneven canopy extending to 20-40m and there is much stratification and many emerging trees (emergents) with large spreading crowns (such as figs). Species composition and variety of life forms are the most complex of any Australian vegetation type. Plank buttressing is common, robust woody lianes, vascular epiphytes and palms are typical and fleshy herbs with wide leaves (eg. ginger and aroids) are prominent.

 Flipbook for Rainforest Diagram

Stanley and Kay Breeden in their book *Tropical Queensland - Australian Natural History 1* describe tropical forests as places where miniature forests grow within forests, plants upon plants, and every available niche is filled with plants. These are places where restrictions on plant growth do not exist. There are no frosts to eliminate sensitive species - no droughts to stunt development.

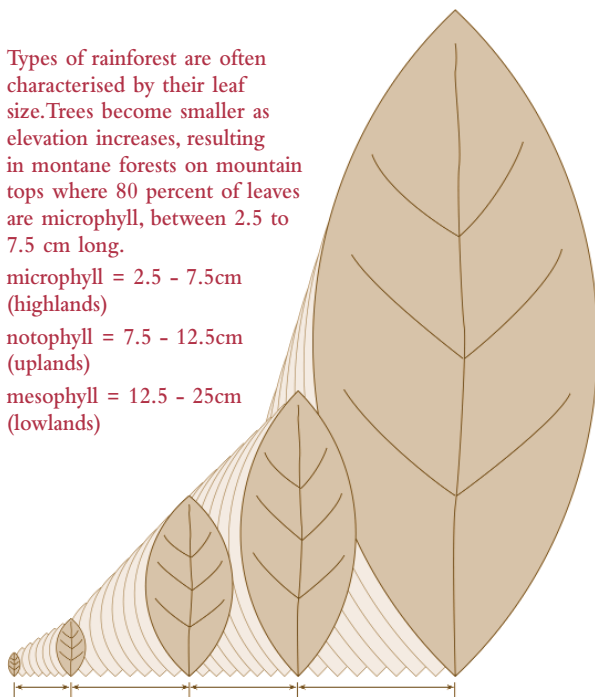
It is estimated that complex rainforests take 500 years to reach climax and once there, remain essentially the same

Types of rainforest are often characterised by their leaf size. Trees become smaller as elevation increases, resulting in montane forests on mountain tops where 80 percent of leaves are microphyll, between 2.5 to 7.5 cm long.

microphyll = 2.5 - 7.5cm  
(highlands)

notophyll = 7.5 - 12.5cm  
(uplands)

mesophyll = 12.5 - 25cm  
(lowlands)



## DEFINITION OF A RAINFOREST

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.

## RECIPE FOR A TROPICAL RAINFOREST

- more than 1500mm rainfall each year
- rain distributed fairly evenly throughout the year
- temperatures of at least 18 deg. daily without great fluctuations
- soils should be generally well drained, but fertile
- sunlight

and are self-perpetuating. This is supported by findings in Trinidad where fossil records dating back 20 million years show that rainforests growing today are essentially the same.

**Buttresses** are a striking feature of some rainforest tree species. Flanges or planks radiate out from the base of the tree, some reaching enormous proportions. To some extent they support a tree's weight but their function is not fully understood.



**Vines** climb in four different ways:

- Scramblers fasten themselves with sharply curved hooks studded along trailing, whip-like branches eg. *Lawyer Cane*
- Root clingers send out lateral aerial roots from their stems to attach themselves to their support eg. *Raphidophora pachyphylla*

## Leaf Shapes



Most simple leaves (left) have a central 'vein' or midrib from which secondary veins branch off. These veins carry nutrients to and from the tissue of the leaf.

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 (see right).

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.



In bi-pinnate leaves the modification is taken a step further with leaflets formed around tertiary, rather than secondary, veins.

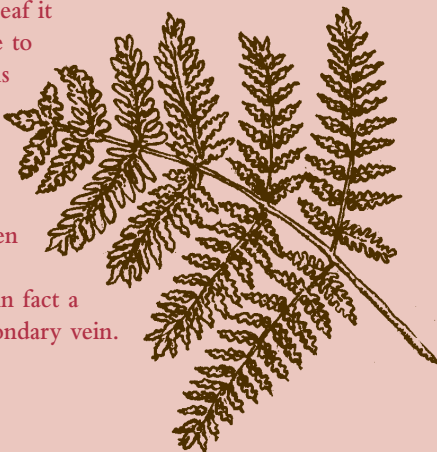
Consequently what may look like a considerable number of small leaves may in fact be leaflets, all parts of just one compound leaf.



• 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

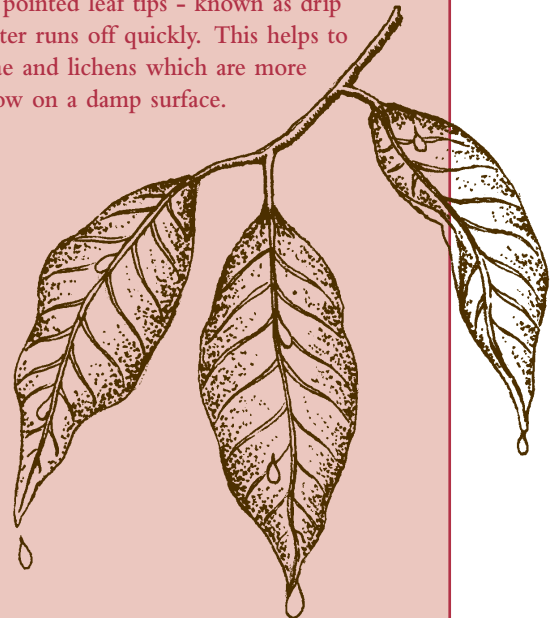
may be possible to see a bud at this junction, while a bud will never be present at the junction between a leaflet and its stalk, which is in fact a primary or secondary vein.



• 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!



• 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.



• 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. There is perhaps no such thing as 'the perfect leaf'.

- Twiners wind themselves tightly around a tree eg. Captain Cook Vine *Merremia peltata*
- Tendril climbers have many tendrils reaching out in all directions and are sensitive to the presence of any support no matter how small. eg. *Supplejack*



**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 merest breeze (heavy seeds would fall to the ground where they would not grow). A single orchid pod may contain up to three million tiny seeds.



**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. Visitors may sometimes see **Bridal Veil Fungi** *Dictyophora indusiata*. Belonging to a group of fungi called stinkhorns, the lacey Bridal Veil can usually be smelt long before being seen! This is because it relies on flies for pollination. Flies are attracted to the foetid 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 applanatum*

is one of Australia's largest bracket fungi and will grow up to 50cm 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.

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.



The **Stinging Tree** *Dendrocnide moroides* is usually quick to emerge in sunny spots along the edges of rainforest or in disturbed patches where trees may have fallen or have been cleared. The leaves, stems and fruit of the plant are all covered



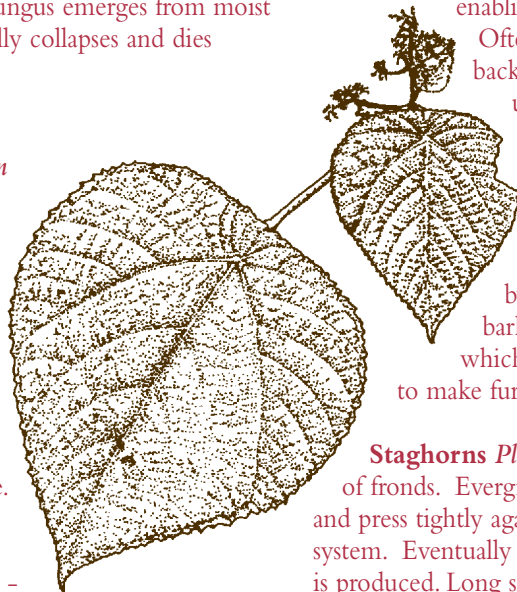
Bracket Fungi

by stiff hollow hairs containing mineral silica (the chief constituent of glass). Described by some as "self-injecting hypodermic needles" they contain a cocktail of active compounds which inflict painful stings on anyone unlucky enough to brush against them! The effects of the poison can last many months. Remedies for stinging tree welts are legion - everything from shaving to battery acid has been tried, usually to no avail! The most relief seems to come from application of a sugar based depilatory. (see Useful Extras) Although Stinging Trees are dangerous to humans, two species of beetle have been observed on the plant, the caterpillars of the White Nymph butterfly feed on the leaves and red-legged pademelons and some birds, including the Spotted Catbird, have been observed eating the fruit.

Another plant which thrives when more light is available is the **Lawyer Cane** or 'wait-a-while' *Calamus spp.* so named 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 Grey-headed and Pale-yellow Robins 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.



**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 2m. These true fronds produce spore 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.



## Habitats and Inter-relationships

Plants and animals use each other in a variety of ways. Only plants can produce food from soil, sun and water, so many animals use them as a food source as well as for shelter. Animals, on the other hand, are able to move around - so plants utilise them to carry their pollen and their seeds.

**Termitariums** in trees are often used by Lace Monitors for nesting. Female Lace Monitors dig holes in the mound, deposit their eggs and leave them to incubate within the warm environment. The termites re-seal their nest so any sign that the mound has been disturbed and repaired is an indication that eggs may be incubating inside.

The **Buff-breasted Paradise Kingfisher** also uses termitariums on the ground for nesting - these birds fly back from central New Guinea to north Queensland in November each year. They spend about a month calling, establishing territories and pairing off before tunnelling about 150mm into a termite mound on the forest floor. Eggs (usually three or four) are laid at the end of the tunnel in an unlined nesting chamber about 150 x 130mm and the young fledge in four to five weeks. Incubation and feeding is shared by both parents. The young birds are fed a variety of large insects, snails, frogs and lizards, but not termites. The adults start leaving late March/early April and the young birds a little later.

By the end of April the forest no longer echoes with the clatter of their calls and the termites re-seal their mound till the next year. The whole cycle poses many fascinating questions: Why do they risk the journey to nest in Australia? And how do the offspring know how to reach New Guinea when their parents have already left? Choosing termite mounds is certainly sensible, as their nesting season coincides with our wet season and the mounds provide one of the few dry shelters available then.

Some species of ants and caterpillars co-exist successfully, with the ants feeding on the sweet substance (called honeydew) produced by the caterpillar larvae, which are in return protected from predators and parasites. Some species of birds also take advantage of the defensive fluid (formic acid) produced by ants and have been recorded picking up an ant in their beak and running it over their plumage, particularly the inside of wing feathers possibly to kill parasites such as lice, ticks and fungi.

## AN EASY WAY OF EXPLAINING BOTANICAL TERMS

John Smith

Order: *Human*, Family: *Caucasian*, Genera: *Smith*, Species: *John*, Common name: *Jack*

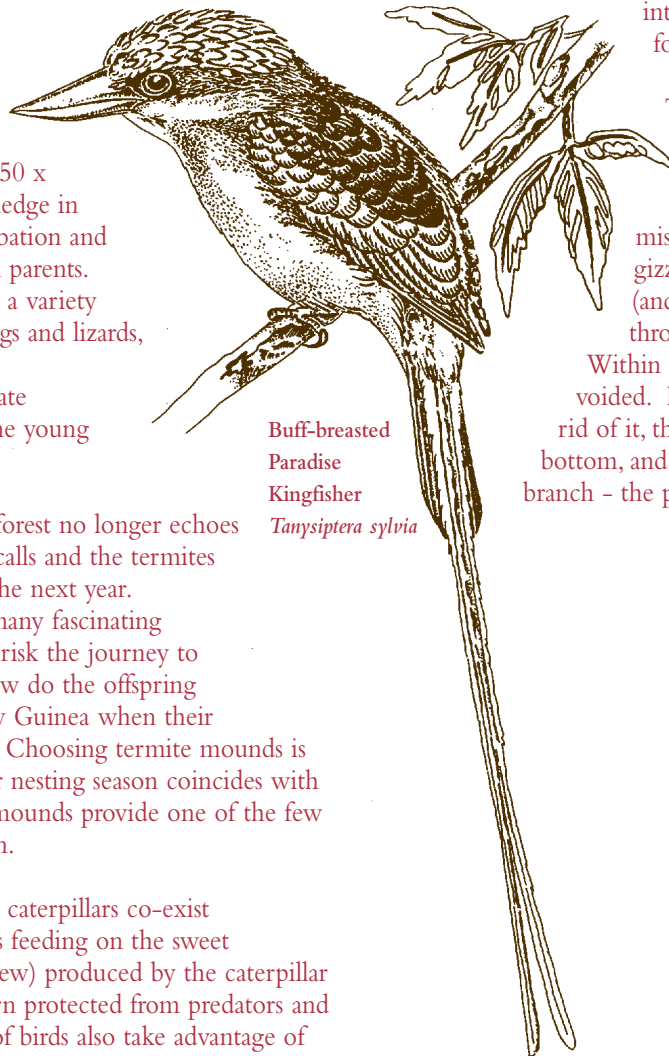
*Cananga odorata*

Order: *Magnoliales*, Family: *Annonaceae*, Genera: *Cananga*, Species: *odorata*, Common name: *Macassar Oil Tree/Perfume Tree/Ylang Ylang*

**Lichens** consist of two separate organisms - an alga and a fungus, whose filamentous roots are woven in a tough skin surrounding the alga. The fungus draws up water and minerals while the alga uses its chlorophyll (green photosynthetic cells) to manufacture food. The fungus also produces an acid which eats into bare rock, providing a foothold.

The **Mistletoe bird** eats insects so has a grinding gizzard but is able, when consuming a mistletoe berry, to close the gizzard and shunt the soft (and quite toxic) seed quickly through its digestive tract.

Within 25 minutes the seed is voided. It is very sticky so, to get rid of it, the bird is forced to wipe its bottom, and glue the seed on a tree branch - the perfect germination spot!



Buff-breasted  
Paradise  
Kingfisher  
*Tanysiptera sylvia*



# Glimpses of Wet Tropics Wildlife

Introducing some of the rainforest regulars who make their homes not just on the Daintree Coast, but throughout the Wet Tropics World Heritage Area.

## Mammals

Evidence that mammals evolved from reptiles is provided by fossils 250-180 million years old. Mammals are 'improved reptiles' and it seems that a number of groups evolved mammalian features independently. Some of these groups are extinct but three have survived: the egg-laying monotremes; the marsupials, which give birth to small 'embryonic' young; and the placental mammals, which nourish their embryos by means of a placenta and give birth to fully formed young. The Wet Tropics has Australia's highest diversity of rainforest mammals. They include Australia's two monotremes the platypus and echidna, 41 marsupials, 15 rodents, and 36 bats. The following list of rainforest mammals (excluding bats) are found from the Daintree River to Cape Tribulation uplands and lowlands:

**Platypus**  
**Echidna**  
**Spotted-tailed Quoll**  
**Yellow-footed Antechinus**  
**Brown Antechinus**  
**Northern Brown Bandicoot**  
**Long-nosed Bandicoot**  
**Long-tailed Pygmy Possum**  
**Striped Possum**  
**Daintree River Ringtail Possum**  
**Musky Rat-kangaroo**  
**Bennett's Tree-kangaroo**  
**Agile Wallaby**  
**Red-legged Pademelon**  
**Water Rat**  
**Fawn-footed Melomys**  
**White-tailed Rat**  
**Masked White-tailed Rat**  
**Prehensile-tailed Rat**  
**Bush Rat**  
**Cape York Rat.**

A range of introduced species and open forest species occasionally seen between the Daintree River and Cape Tribulation have been omitted. **Dingoes** may be considered a naturalised

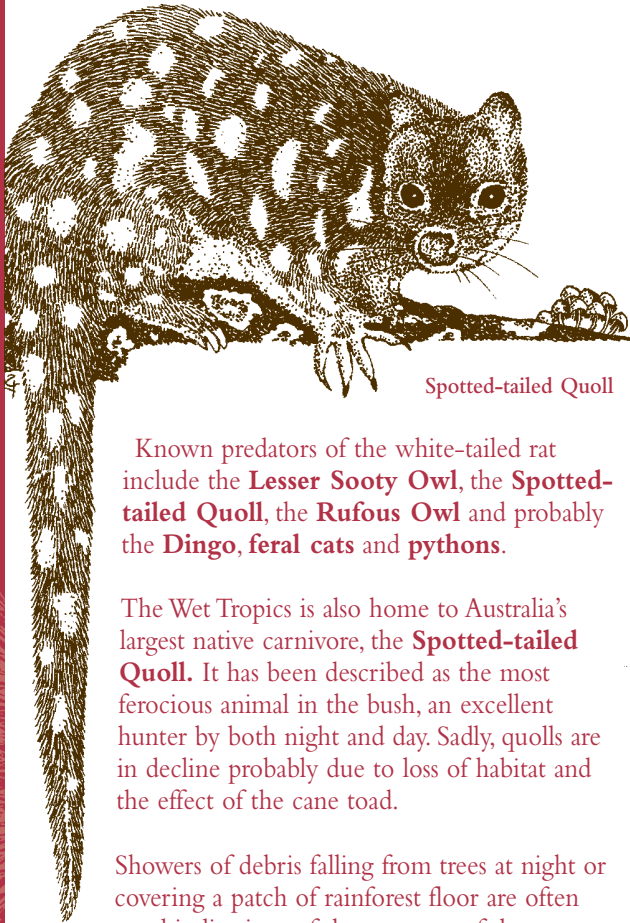
exotic. **Agile Wallabies** are locally rare and like the **Brown Bandicoot** are more abundant outside rainforests. Suitable habitat exists for **Green Ringtail Possums** and other rainforest mammals that have not been recorded.

The forest floor is home to many rodents and marsupials, and visitors can listen for soft rustling in leaf litter, digging and scratching, chewing noises or the thumps of hopping feet and twigs snapping. One of these is the **White-tailed Rat** *Uromys caudimaculatus*. Weighing 500-890g, it is one of Australia's largest rodents. This agile climber can be seen at night, using lianes and branches as highways through the rainforest, feeding on fruits still attached to the trees. It also forages extensively on the ground on a diet that includes fruits, fungi, insects, small reptiles, amphibians, crustaceans and bird eggs. Its strong teeth, ideal for breaking into hard-shelled rainforest fruits and coconuts, have also earned it a reputation for demolishing items such as drink cans, wooden cupboard handles, polythene water pipes, car seats - whatever smells interesting!

Rainforest residents are careful to wipe off the smell of body oils from items that may tempt investigation from this generalist feeder! Studies have shown that it can survive in forest fragments as small as 7.5 hectares but does not readily move between fragments separated by clearings.



White-tailed Rat  
*Uromys caudimaculatus*



Spotted-tailed Quoll

Known predators of the white-tailed rat include the **Lesser Sooty Owl**, the **Spotted-tailed Quoll**, the **Rufous Owl** and probably the **Dingo**, **feral cats** and **pythons**.

The Wet Tropics is also home to Australia's largest native carnivore, the **Spotted-tailed Quoll**. It has been described as the most ferocious animal in the bush, an excellent hunter by both night and day. Sadly, quolls are in decline probably due to loss of habitat and the effect of the cane toad.

Showers of debris falling from trees at night or covering a patch of rainforest floor are often good indications of the presence of the **Striped Possum** *Dactylopsila trivirgata* as it gouges away bark in search of wood-boring grubs and other insects. Once exposed, potential meals are extracted with the sharp claw of the possum's elongated fourth finger. Slightly built with a distinctive pattern of black and white stripes along its head and body, this possum is memorable not only for its skunk-like appearance, but also for its clinging, pungent odour. Wildlife carers tell of enduring this pungent 'perfume' for weeks while carrying orphaned babies close to their skin for body warmth! Leaves, nectar, fruit and honey from native bees are eaten, but insects provide the greater part of its diet.

### Flipbook for Striped Possum

The cheeky **Yellow-footed Antechinus** *Antechinus flavipes* is a favourite with visitors on extended stays in the Daintree. However some locals find their kitchens pilfered, and regard nests in the lounge as a nuisance. Another familiar sign of antechinus activity is finding victims such as mice or birds neatly turned inside-out, the skins left as a testimony to the feast. Antechinus are well-known for their violent mating habits. At the end of the two-week mating season, scarcely a single male is left alive. Death results from the stress associated with the social demands of the mating season, a time when the males stop feeding, live on their reserves and seek all opportunities to mate. It seems that stress hormones reduce the effectiveness of the immune system, allowing males to succumb to parasites and infections.

## Birds

From the giant cassowary to the tiny scrubwren, the Wet Tropics is home to the greatest concentration of bird species on the continent. The major reason is the diversity of habitats in the region. There are seabirds on the coral cays offshore, migratory birds visiting the wetlands and mudflats, and many species which rely on the rainforest and open forests. Of more than 370 species recorded in the Wet Tropics, more than 130 rely on forests with a closed canopy. Of these, 23 species are rarely found anywhere else in Australia. Most of these endemic species are confined to the upland rainforests, but some occur in the Daintree lowlands.

However, keen birdwatchers choose Wet Tropics locations other than the Daintree Coast to tick off their bird lists, because the area is not known for its bird diversity. Respected birdwatcher Lloyd Nielsen in his book *Daintree: Jewel of Tropical North Queensland* writes that although the area has some of the richest rainforest for plant and insect species, wildlife such as mammals and birds are strangely scarce. Most noticeable is the absence of large populations of bird species, when 100 species can be recorded in a day just a short distance south in the Daintree River valley.

You are still likely to encounter the flashes of movement and colour and the calls of common tropical birds on the Daintree Coast. The loud 'walk to work' call of the **Noisy Pitta** is often considered to be an omen of rain, probably because their breeding season coincides with the start of the the wet season.

Secretive and silent except when nesting, these rainbow coloured 'jewel thrushes' are ground-dwellers which forage for insects, wood-lice, worms, snails and other small animals amongst the leaf litter on the rainforest floor. The pitta's nest is a loosely constructed dome of sticks, leaves, fronds, bark strips, roots and moss, lined with decayed wood pieces and sometimes secured with mud, usually between buttress roots.

It also may make a peculiar addition to its nest in the form of a 'doormat' of moist mammal dung which is carried into its nest on its feet, staining the eggs.



Noisy Pitta *Pitta versicolor*

# Facts & Stats

## BATS

It is now considered that fruit bats, rather than insects or birds, are the prime pollinators of a number of important timber trees, as well as many tropical fruit trees. It is estimated that 70 percent of fruit sold on South East Asian markets is bat-pollinated.

While for most people a bat is a bat, there are two totally distinct groups of bats, the micro-bats and the mega-bats. The mega-bats (or as they should be properly called, the Old World fruit bats) are a group related to primates (their nearest relatives are the lemurs of Madagascar), and hence they are our closest relatives in Australia. They are all vegetarian and range from fruit bats, the giants of the bat world weighing in at 1kg, to the blossom bats, which at 15g are the pygmies. Mega-bats are restricted to Africa, Asia and the Pacific, never reaching Europe and the Americas.

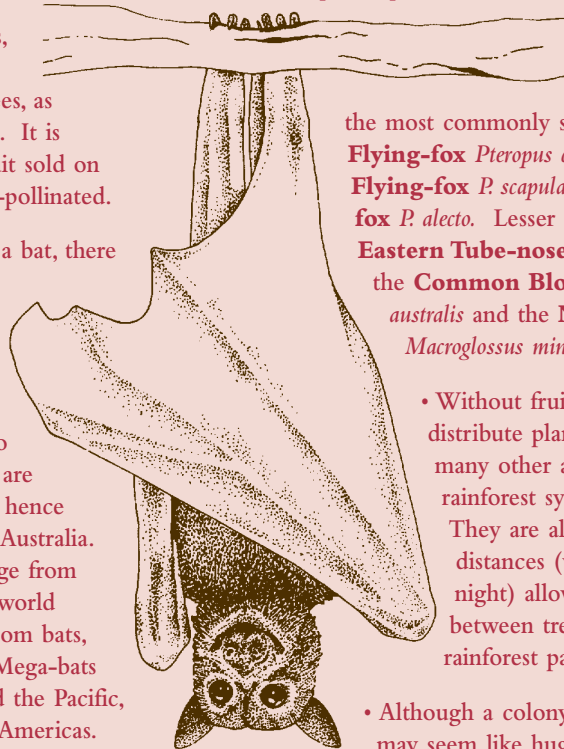
Micro-bats are predominantly insectivorous, although a frugivorous family (the leaf-nosed bats) is found through Mexico to South America. We don't know who micro-bats are related to; they appear to have evolved independently of the mega-bats but look superficially the same, as both groups derived from four-footed ancestors. Micro-bats use sonar to forage for food and to navigate in caves which provide roosts for many species.

- When it comes to fruit bats, passions run high. There are those who love them and fear for their future and those who call them vermin and want them exterminated. Farmers often see no reason to protect the animals which raid their orchards. Bat raids on commercial orchards may be a warning sign that all is not well with the forest.

- Many fruit species such as bananas have been dependent on mega-bats especially Blossom-bats for pollination and seed dispersal during their evolution. Although genetic engineering can produce many desirable characteristics, when plant breeders want to combat a problem such as fungus attack, they need to go back to wild stock. Without fruit bats and their relatives, the wild plants would not be there.

- Most species, both mega-bats and micro-bats, seem to live for about 15-25 years.

Spectacled Flying-fox  
*Pteropus conspicillatus*



- Of the six species of mega-bats in this area, the most commonly seen are the **Spectacled Flying-fox** *Pteropus conspicillatus*, the **Little Red Flying-fox** *P. scapulatus* and the **Black Flying-fox** *P. alecto*. Lesser known mega-bats are the **Eastern Tube-nosed Bat** *Nyctimene robinsoni*, the **Common Blossom-bat** *Syconycteris australis* and the **Northern Blossom-bat** *Macroglossus minimus*.

- Without fruit bats to pollinate and distribute plant species on which so many other animals depend, our rainforest systems could collapse. They are also able to fly great distances (well over 50 km in one night) allowing cross-fertilisation between trees in otherwise isolated rainforest patches.

- Although a colony of 25,000 bats in a camp may seem like huge numbers, camps are few and far between, resulting in an average which may be less than one bat per 10 hectares. Present bat numbers are only a fraction of previous populations; even now we could be reaching critically low numbers. The Spectacled Flying-fox is now listed as 'vulnerable' due to loss of habitat.

- No bats are blind, although many have small eyes. Micro-bats depend largely on sonar, or echo-location. Sonar is distance-measuring with sound (not to be confused with radar, which is distance-measuring with radio waves). Micro-bat sonar is produced by a very specialised voicebox (larynx). Because they rely on hearing the reflection of sound waves, micro-bats often have big ears with all sorts of wonderful convoluted trumpet and horn-like shapes to catch and focus the fainter sonar echoes.

- Of the estimated 28 species of micro-bats in this area, the most commonly seen are the **Little Bentwing-bat** *Miniopterus australis*, the **Little Northern Freetail-bat** *Mormopterus loriae* and the **Horseshoe-bat** *Rhinolophus megaphyllus*.

- Eating up to ten insects a minute, it's no wonder that micro-bats are called the farmer's friend. Insectivorous bats are probably very effective controllers of mosquito-borne diseases.

- Some micro-bats drink by wetting their fur as they fly over water, licking up the moisture later.





Shining Starling  
*Aplonis metallica*

Australia's only native starling, the red-eyed **Metallic** or **Shining Starling** breeds in the Wet Tropics, commencing about August each year.

The birds breed in colonies, often numbering in the hundreds, festooning large rainforest trees with their bulky nests - often the weight of many nests will break off branches. When walking through the rainforest, nesting trees can be heard long before they are seen and noisy flocks of birds hurtle through the rainforest seeking fruit which is 95 percent of their diet. Each pair raises two, sometimes three broods in a season before migrating to New Guinea in March/April. In sunlight the glossy black feathers of adult birds shine with an iridescent green and purple. Immature birds are dark above but have white underparts streaked with black. Grey Goshawks regularly raid the nests, feeding on young starlings.

The Lace Monitor can also be found prowling around the base of a nesting tree, feeding on fallen eggs and babies in the thick carpet of seedlings which springs up from dropped fruit. Roosting can be a noisy affair with birds congregating in the early evening, usually all in one tree. Many visitors staying in Cairns recall hearing them in the city centre.



The name **Cassowary** comes from two Papuan words, 'kasu' which means horned, and 'weri' which means head. Although three species are found in Papua New Guinea, only one of them is found in Australia - *Casuaris casuaris johnsonii* the Southern, or double wattled, Cassowary.

- Fossil records show that a dwarf cassowary also existed in Australia when conditions were wetter.
- In the dim rainforest light, usually the first indication that a cassowary is near is a low rumble, described as 'gargling with a throat full of marbles'. In 2003 researchers in Papua New Guinea found the ultra-low booming sounds range from 23-300 Hertz. When heard from a distance it sounds like the low rumbling of a plane or vehicle. These sounds may help the birds to communicate their territory over large distances and in dense forest.

- The cassowary belongs to a primitive family of birds (ratites) which includes the flightless kiwi, emu, ostrich and rhea. Cassowaries and emus are closely related, though cassowaries are more thickset than emus and their plumage is a glossy black. Their wings are rudimentary, reduced to a few long, bare quills.
- Most cassowaries are about 1.5m high, although they can reach up to 2m. It is difficult to tell the sexes apart. Females are generally bigger, weighing up to 60kg compared to the average 35kg male. The males have longer tails, and females often have brighter red and blue neck wattles (the colour intensity changes with mood).
- The casque, which is not horny or bony, but a tough keratinous layer of skin covering a core of firm, cellular foam-like material (similar to styrofoam), is thought to indicate age and dominance - it's not a crash helmet!
- The claw on the inner toe of each foot is a large straight spike, about 120mm long and 30mm at the base, which makes a formidable, though seldom used, weapon.
- The pale greenish-blue eggs are similar in size to emu eggs, weighing 500-600 g and equal to about 10 chicken's eggs. After laying the usual clutch of three to five eggs, the female leaves the male to incubate the eggs and raise the chicks. He sits on the eggs for about 50 days, constantly turning them and eating and drinking very little.
- The male can be very aggressive when guarding the chicks, but after nine months he 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 stripes fade within three to six months and by the first year the chicks are a dull brown, but it takes three years for the glossy black plumage to develop fully.
- Cassowaries will breed quite readily in captivity and have been reported to live up to 40 years.



#### Flipbook for Cassowary







Wompoo Fruit-dove



If you're looking for **Wompoo Fruit-doves** your first stop should be fruiting quandong trees, which are a great favourite with these large birds. Despite their loud baritone calls of 'wompoo' or 'wallock-a-woo', Wompooos are often difficult to spot as they feed high in the canopy. The gold flecks on their wings and tail resemble flecks of sunlight and the bright purple on their breasts mimic brilliantly coloured leaves, such as quandongs. These handsome pigeons are also very fond of ripe fruit of the Ylang Ylang or Perfume Tree.

## Reptiles

There are 162 species of reptiles in the Wet Tropics, about a quarter of all reptiles found in Australia. They range from tiny 4cm skinks hiding in rainforest leaf litter to the country's largest reptile, the crocodile, which grows up to 6m long.



More than 50 snake species have been recorded in the Wet Tropics including Australia's largest, the amethystine python. The longest recorded was 8.5m at Gordonvale. Luckily, they are not venomous - they kill prey by trapping and squeezing it. Snake venom is a modified saliva used to incapacitate prey. It allows the snake to target a range of animals which would otherwise be too big to tackle.

Venom also begins the process of digestion and speeds it up, important for cold-blooded animals whose stomach enzymes could stop working if external temperatures drop below critical levels.

The third function of venom is to deter potential attackers.

Australia has only about six percent of the world's species of terrestrial and marine snakes, but these include nearly 25 percent of all venomous snakes and about 40 percent of dangerous front-fanged snakes.

The **Taipan** has very long fangs by Australian standards (up to 13mm) and is swift and agile.

The average amount of venom produced by a taipan in one bite is enough to kill 12,000 guinea pigs.



Lace Monitors  
*Varanus varius*

Although not naturally aggressive, it will attack ferociously if cornered. Recently taipans have been found in the Cape Tribulation area, an unusual occurrence as taipans are usually not rainforest dwellers, preferring tropical woodlands and canefields where they hunt for rats and mice. Luckily, most of the snakes which visitors to the Daintree Coast are likely to see are non-venomous pythons and tree snakes.



The largest lizard in the Daintree is the **Lace Monitor** *Varanus varius* at over 2m in length. It is distinguished from the **Spotted Tree Monitor** by contrasting banding patterns rather than all spots.

Lizards have two penises, called hemipenes, one on either side of the tail. They only use one at a time, but may alternate during copulation.

Some lizard species can shed their tails if caught or threatened. This process, called autotomy, uses muscles on either side of fracture planes between the vertebrae in the tail to pull in opposite directions and break the tail in two. Although most species can replace the tail, the new one has a rod of cartilage running through it instead of bone and it may lack the markings of the original tail.

The **Chameleon Gecko** *Carphodactylus laevis* has a large carrot-shaped tail which squeaks and thrashes around when it detaches from the body, distracting predators from the escaping lizard. Geckos and legless lizards have fixed, transparent eyelids which they clean by licking them.

At least 16 Wet Tropics skink species are found nowhere else in the world. They include the **Prickly Forest Skink** *Gnypetoscincus queenslandiae* which has been described as the most unusual looking skink in Australia. Whereas the scales of most skinks are smooth or keeled, those of the Prickly Forest Skink are bluntly pointed and bead-like. They apparently serve to rapidly disperse moisture over the body surface. This skink, which grows to a length of 8cm, lives only in rotting logs in the dampest parts of the rainforest and is rarely seen as it hunts at night. (Please don't disturb logs and rocks to show people creatures hidden under them.)

## Frogs



The Wet Tropics is a very special area for frogs. A quarter of all Australia's frog species are found here - more than 50 species of various shapes, sizes and colours including representatives of all five Australian frog families. More than 20 species are found nowhere else, and many are limited to very small areas.

Some of these frogs have disappeared in the last 10 years, including the Armoured Mist Frog *Litoria lorica*, Mountain Mist Frog *L. nyakalensis* and Sharp-Snouted Day Frog *T. acutirostris* from the Daintree uplands. Another three species still exist at lower altitudes but have vanished from the mountaintops. They are the Common Mist Frog *L. nannotis*, Australian Lace-lid *Nyctmystes dayi* and the Waterfall Frog *L. nannotis*.

However, there are many common frogs still found on the Daintree Coast. One little frog that makes itself heard in wet weather during the day is the **Daintree Whistling Frog** *Sphenophryne fryi*. Males call from beneath leaves on the floor of the rainforest, the call being a series of high-pitched whistle-like notes. These frogs, like others in the same microhylid group, don't spawn in water so there are no free-swimming tadpoles. The female lays her eggs in a shallow burrow and parents stay close to the eggs till they hatch into fully developed, tiny frogs.

## Insects

Insects reach their highest diversity and most spectacular forms in tropical rainforests. Representatives from all the insect groups or Orders inhabit the rainforest but some such as the crickets (Orthoptera), the beetles (Coleoptera) and the moths and butterflies (Lepidoptera) reach their highest diversity here. For example, of the 385 species of butterfly recorded in Australia, 136 are exclusively tropical. Many species have not yet been formally described and many more await discovery. For example, the largest stick insect in the world (over 50 cm) was recently photographed but has never been collected.



**Dragonflies** (Odonata) are seen hunting for insect prey above rainforest streams and at the forest edge. Their larvae live in water and are voracious predators of tadpoles and small fish. Although the adults are fast fliers they can be caught by bee eaters zooming across the rainforest during their seasonal migrations.

**Crickets and katydids** (Orthoptera). Night in the rainforest is dominated by calls of male crickets, especially in the wet. Their penetrating songs occur at specific frequencies and are arranged in pulses so that each species can be recognised by its song - rather like frogs. The sound is produced by rubbing modified wing cases together. Mole crickets call from burrows in the ground especially designed to amplify the sound. Other crickets call from under leaves on the ground,

while katydids and tree crickets call from higher up in the canopy.



**Stick and leaf insects** (Phasmatodea) spend their life in the forest canopy feeding on leaves. They are highly camouflaged to avoid being eaten by birds. The adults rarely descend to the forest floor, their eggs simply fall to the ground and hatch into nymphs which climb back up the trees. The females are larger than the males, and often have reduced wings so rarely fly.



**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 spread far and wide from the nest to gather food for the resident queen and king as well as the soldiers which guard the colony. Termites' biomass is probably greater than that of all other forest-living animals put together.

**Bugs** (Hemiptera) have a proboscis to suck sap from plants and juices from prey. Some of the most spectacular are the shield bugs (Pentatomidae) which, like many bugs, give off a pungent defensive odour when handled.

The most familiar bugs in the rainforest are the cicadas. They are often confused with crickets, but their songs resonate from high in the rainforest during the day, rather than at night.



**Butterflies and moths** (Lepidoptera). A glance at the rainforest canopy will show that there are many chewed leaves, while some leaves are missing altogether and only a stalk remains. The larvae of butterflies and moths are responsible for much of the damage. There are two main distinctions between moths and butterflies. All butterflies have antennae with club-shaped ends while those of most moths are feathery or pointed - although some moths break this rule. In addition, while many moths possess a device (frenulum) to lock their wings together in flight, this is not found in any butterflies, with one exception - the male regent skipper found here in the Wet Tropics.

Most species of butterfly have a single species of host plant, or several closely related host plants. These relationships have evolved as butterflies adapted to the specific leaf chemicals of the host plant. The adults have sensors on their feet and abdomen to ensure they lay their eggs on the correct plant. Occasionally they make mistakes: for example, the host plant for the Cairns Birdwing is a single species of rainforest climber Dutchman's Pipe (*Aristolochia tagala*), but the females are also attracted to the introduced Dutchman's Pipe (*Aristolochia elegans*) in suburban gardens and lay their eggs, but the larvae fail to survive

on this exotic species. The larvae of some butterflies and moths accumulate the toxic chemicals in their host plants and when the larva changes to an adult (the process of metamorphosis) the chemicals protect the adult from predators. Several butterflies and moths migrate, spending the winter in more tropical climates and migrating south each spring. One of the most spectacular events occurs as the migratory skipper (*Badamia exclamationis*) wings its way north over rainforest each autumn.

Some of Australia's most spectacular **beetles** (Coleoptera) are found in the rainforest. Longhorns are often found on tree trunks or flying around lights at night. As their name suggests, they have oversized, curved antennae longer than their bodies. Their larvae are wood borers usually found in trees that have recently died from other causes. Jewel beetles or buprestids are nectar feeders and pollinators and are most likely to be seen in the canopy on flowers.

**Fireflies** (Lampyridae) are restricted to tropical rainforests and mangroves and perform spectacular luminescent displays. Some species are solitary and the males can be followed as they fly through the forest at night, emitting controlled flashes from a light-producing organ at the tip of the abdomen. They are searching for females which are flashing less brightly on the ground. The larvae also produce a feeble light and feed on snails and slugs.

Another group of spectacular beetles often attracted to lights at night are the rhinoceros and Christmas beetles (Scarabaeidae). The larvae feed on decaying wood and humus and help break down fallen timber. Adult Christmas beetles are iridescent green and brown and feed on the leaves of rainforest trees. The closely related fiddler beetles have a strongly patterned, enamelled look and are active by day as they fly from flower to flower feeding on pollen. Unlike other beetles, they can fly strongly without having to lift their wing cases to allow the membranous hind wings to emerge.

Although **flies** (Diptera) are a diverse and interesting group of the rainforest, most visitors focus on the bloodsucking groups. Mosquitoes (Culicidae) are able to breed in tiny amounts of water trapped in plants, tree holes and on leaves lying on the ground. The females require a blood meal to produce eggs. On the forest edges March flies (Tabanidae) are attracted to dark clothing especially blues and blacks and inflict a painful bite. They do not transmit any diseases.



#### **Ants, bees and wasps** (Hymenoptera)

There are more tree-dwelling ant species in the rainforest and mangroves than in arid areas, and most bite and sting if their nest is disturbed. Ants in the genus *Polyrachis* build nests in trees by gluing together two adjoining leaves with silk. They occur in small colonies of a few individuals and are nocturnal. When disturbed by day they rush outside, open their

jaws wide and frantically tap their abdomens on the leaf surface, making a noise like a rattle.

Native bees are also more common in the tropics and are attracted to human sweat. Nests are found in tree holes and contain large wax pots for storing pollen and honey. Most wasps lead solitary lives building cells of clay which are filled with paralysed prey as food for their larvae. One group, the paper wasps (Polistinae), form colonies founded by a single queen. Their nests are a tier of combs attached by a stalk to buildings and cliff overhangs. The workers defend the nest with painful but generally short-lived stings.

## Spiders



**Spiders** (Araneae) can be divided into two main groups - the more primitive trapdoor and bird-eating spiders (Mygalomorphs) with large vertical fangs, and the web-producing spiders (Araneomorphs) which include wolf spiders, huntsmen, golden orb and many others. Spiders are the most common predator of the rainforest and open range hunters such as the wolf spiders (lycosids) and huntsmen (heteropodids) are active at night when they can be detected by reflections from their large eyes. Spider silk is stronger than steel of the same thickness, but very light. Why don't web-weaving spiders become stuck on their own webs? Their bodies and feet are covered in an oily exudate, and special bristles between their hooked claws lubricate the thread as they move it. The St Andrews Cross Spider (*Argiope keyserlingi*) is often found inside buildings in the rainforest. Its web is easy to identify with four distinctive zigzag ribbons of silk radiating from the centre. Brightly coloured spiny spiders (*Gasteracantha* sp.) have a yellow and black abdomen decorated with black spines on each side. A spiny spider was the first Australian spider to be collected by Joseph Banks near Cooktown.



## Animal Pests



### Cane Toads

The introduction of the Cane Toad *Bufo marinus* to control cane beetles which were damaging sugar cane crops represents a spectacular failure of an attempt at biological control. The toads made no impact on the cane beetles, but have become a major menace to the environment, gobbling up insects and even small mammals and reptiles and poisoning almost anything which tries to eat them.

- Originally 102 adults were imported as breeding stock at Gordonvale, just south of Cairns in 1935. By 1937, 62,000 toadlets had been released which led to disastrous results for native animals.
- Researchers based on the Daintree Coast report the toad population has “crashed” to levels that are less than 1% of 1970s records. They suspect the toads are falling prey to a variety of parasites and diseases which normally attack native frogs, lizards and snakes.
- A Cane Toad’s poison is contained in glands on its shoulders. If the animal is squeezed, the poison can squirt up to 1m (and if it enters the eyes it causes great pain and temporary blindness). The eggs and tadpoles are also toxic, a threat to other aquatic creatures.
- Some animals, such as Water-rats, Black Butcherbirds, Kookaburras and Crows turn toads on their backs and eat poison-free parts such as legs and livers.
- CSIRO researchers are now studying the cane toad’s native environment in South America, in the hope that they will discover a control which can be applied to Australian populations.
- A female toad can lay almost 60,000 eggs a year. One in 200 survive, living up to 16 years!
- Cane Toad eggs are easily identified. They look like a row of black dots encased in a clear piece of spaghetti – no native frogs lay eggs in this way, so you can be certain you are pulling the right ones out of water for death by dessication in the sun.
- ‘Toadpoles’ are also easily identified – they are completely black during the day and are diamond shaped when viewed from above. All native frog tadpoles have patches of some other colour (brown, grey, tan, beige), even the darkest ones.
- The only good toad story is that of a community group in the Innisfail area which raised enough money to build an old people’s home by collecting toads and selling them to laboratories for dissection.



### Feral Pigs

Feral pigs are considered a major agricultural and environmental pest. Agricultural losses are estimated to cost \$70 million a year, through the 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.
- They prey on native wildlife consuming large numbers of soil fauna such as earthworms, small frogs and beetles.

Feathers, fur and mammal bones have been found in their stomachs but it is uncertain whether these items were part of carrion when ingested. Other pigs’ hooves have also turned up to provide evidence of cannibalism.

- Although they are thought to prey on eggs of the endangered Cassowary, evidence has yet to be uncovered.
- Weeds often thrive in areas disturbed by pigs.
- Options for controlling pig numbers are hunting, trapping, baiting and fencing, with trapping considered to be the most suitable method in rainforests.
- Special cassowary-friendly pig traps have now been designed to reduce the chance of cassowaries being caught in pig traps.
- A female pig has one or two litters of six piglets in a year – 50-80% die in their first year.



### Feral 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 4kg 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. There are many reports of Amethystine Pythons easily making a meal of a cat. The recent introduction of an exotic cat species the Bengal cat, a hybrid between the domestic moggy and the Leopard cat (a denizen of South East Asian rainforests) is cause for concern. The Bengal cat may contribute genetic material to the feral population leading to a more efficient and destructive predator. While feral cats shun water, the Bengal takes to it like a duck...

## Derivations

**Cane toad** *Bufo marinus*

*Bufo* = Latin toad.

*marinus* = of the sea, refers to the fact that they can tolerate brackish water.



Cane Toad  
*Bufo marinus*



# What Makes the Daintree Coast Special?

The Daintree Coast is a paradise for botanists. The plant communities here include many of the species which qualify the Wet Tropics as a botanical treasurehouse.

## Rare and Unusual Plants

There are close to 200 species of plants which grow only in the Wet Tropics, of which about 170 have been found north of the Daintree River, with perhaps 30 of them growing only in the Daintree Coast and nowhere else in the world.

An entity such as a plant or animal naturally inhabiting only a particular geographic area is frequently described as 'locally endemic' to that area, so it is accurate to say that the Daintree Coast is home to a large number of locally endemic plants, or that 'endemism' is high in the Daintree Coast.

The botanical richness of the area is partly due to the wide range of habitats represented, for example: foreshores, ocean headlands, mangroves, freshwater swamps, coastal flats, creek bank communities, hillslopes, rocky ridges and windswept uplands. But part of the richness is inherent in the fact that some of the best of the Daintree Coast rainforests, say between Hutchinson Creek and Noah Head, appear to have been undisturbed by climatic or volcanic catastrophe for at least many thousands of years.

Recent work by CSIRO has indicated that much of our traditional lowland refuge areas (Cooper, Noah and Oliver Creeks) were in fact largely eucalypt forest only 15,000 years ago. The banks of Cooper Creek near Heritage Lodge revealed charcoal deposits indicating sclerophyll forest. The only true refugia may indeed be the peaks and the network of steep creek incisions on the lower flanks of the Thornton Peak area.

Some of the endemics are relatively insignificant to the amateur observer, but there are many which have handsome characteristics. Here are a few notes on some of the more outstanding Wet Tropics endemics




occurring in the Daintree Coast, but not necessarily restricted to the Daintree Coast:


**White Bean** *Storckiella australiensis*, a tree of rich lowland forest, is quite common around Noah and Oliver Creek, with some specimens to be seen along the Marrdja boardwalk. White Bean develops distinctive buttresses with age, and in some years puts on a prominent show of yellow cassia-type blossoms. Viewers will be surprised to see just how many White Bean trees there are in a given area, all of them easily identified by the synchronous flowering. Along with many other rainforest trees it only flowers every six, seven or ten years. White Bean flowered heavily in July-September 1991. White Bean is restricted to the Daintree. It belongs to the family Caesalpiniaceae, the family of the Bauhinia and Ponciana trees.

**Cassowary Walnut** or Noah's Walnut *Endiandra microneura* is notable for the long shiny leaves of saplings and coppice shoots, first bright pink, then glossy green. The mature tree also develops characteristic buttresses. The fruit is quite large, elongate and yellow skinned, encasing a single seed. Specimens can be seen along the Marrdja boardwalk. It is in the Lauraceae family, the family of the avocado.

 Flipbook for *Endiandra*

*Beilschmiedia castrisinensis* has no common name and is another member of the avocado family which can be seen along the Marrdja boardwalk. The most notable aspect of this tree is the very large fruits which it drops fairly dependably each year. An average sized fruit for this species is 70-90mm long and about 40mm in diameter, glossy black, with reddish flesh which is quite pleasantly acid to taste but should not be eaten, as it would almost certainly have toxic consequences. Cassowaries, however, swallow these fruit quite commonly, and it is not rare to see ten or more deposited in a pile once the cassowary digestive system has dealt with them. This species is restricted to the Daintree Coast.

 **Daintree Penda** *Lindsayomyrtus racemoides* is notable for the lovely mauve-purple colour of new leaves on seedlings, saplings and sometimes on side shoots sprouting from mature trees. Examples of this tree can be seen along the Marrdja boardwalk. It is another species which may put on very heavy crops of blossom and fruits once in six or seven years. The fruit have an odd bi- or tri-lobed shape, not expected in the family Myrtaceae, to which this tree belongs. There was a heavy flowering in December 1990, and another in December 1997. Seeds germinate readily and the seedlings persist for ten or more years, each showing perhaps only six or eight leaves and often carpeting sections of the forest floor.

 **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. Racemes on which the flowers are carried are as much as 75cm long. A very small percentage of flowers develop into fruit capsules sometimes as big as a hand. Several plants of this species are found along the Marrdja boardwalk. This 'oak' is a member of the Proteaceae family which includes Grevilleas, Banksias and Waratahs.

Although many of the endemics grow in places outside the areas available for visits by commercial tour groups, some of them are described in the following list, for use when people with special interests join your tour group.


**Xanthostemons** are in the family Myrtaceae, a family with vast numbers of species in Australia, including about 70 species in the rainforest and about 700 eucalypts, all members of Myrtaceae (but the family is not by any means confined to Australia). Some members of this large, unwieldy family have undergone a name change to Corymbia (including the Bloodwoods and some of the gums in the Eucalyptus genus).

The **Cooper Creek Penda** *Xanthostemon formosus* (*Xanthostemon* means yellow stamen and *formosus* means beautiful) is related to the **Golden Penda** *Xanthostemon chrysanthus* of the nursery trade, quite

common in north Queensland gardens. The Golden Penda can be easily seen from Noah Creek bridge - it is a prominent and predictable summertime bloomer, putting on bright yellow blossoms. *Xanthostemon formosus*, however, is a very rare tree restricted to the Daintree Coast, with perhaps fewer than 2000 individuals (including seedlings and saplings) known to botanists, most of them within a range of about two hectares. The most prominent character of this species is, that instead of the myriad slender stamens put out by relatives such as the Golden Penda, *X. formosus* develops only about 25 stamens, each of them quite robust. The flowers are an unusual greenish yellow and the fruit is also structurally distinctive. Unlike the Golden Penda which produces nectar during the day and is pollinated by bees and day-flying insects, *X. formosus* produces nectar at night and is pollinated by bats and moths.


*Xanthostemon verticillatus* is restricted to the Daintree-Bloomfield area, growing as a small tree in and beside rocky river beds.


*Xanthostemon granticus* is a small to medium-sized tree restricted to the granite country around Mt Pieter Botte, which is part of 'the Greater Daintree'.

 **Flipbook for Xanthostemon**

**Fragrant Boxwood** *Xanthophyllum fragrans* is a moderately rare species. This is a large tree which produces heavy crops of large and wonderfully 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, and the *fragrans* means ... you guessed it! The family of this tree is Xanthophyllaceae, a family with only one genus, quite unlike the family Myrtaceae, referred to earlier.

 **Flipbook for Xanthophyllum**

 **Gymnostoma** *australianum* has no common name. *Gymnostoma* fossils are recognised in Victorian deposits dating back 30-40 million years. This ancient and hardy tree now grows only around the top of Thornton Peak, Mt Pieter Botte, The Roaring Meg and Noah Creek. In structure a *Gymnostoma* resembles Cypress pine trees because its twigs are numerous and cylindrical, while the leaves are reduced to narrow scales which cling closely to the twigs. If you pause to allow your visitors a view of Thornton Peak, *Gymnostoma* is certainly a plant worthy of mention. It is restricted to the Greater Daintree, and belongs in the family Casuarinaceae, which includes all the 'she-oaks' and 'beach oaks', better described as casuarinas.

 **Elaeocarpus** *stellaris* is a Quandong with no distinguishing common name but nevertheless a very distinguished tree. Most rainforest visitors become acquainted with the commonest of the Quandongs, the **Blue or Silver Quandong** *Elaeocarpus angustifolius*, because it has bright blue edible fruit (wait

till they are over-ripe for best flavour and least astringency) and is a distinctively shaped and common tree. But *Elaeocarpus stellaris* is a rare one with much larger fruit, also blue, but where the endocarp of the common quandong is smallish, spherical and deeply sculpted, the endocarp of a *stellaris* is large, and shaped in five wings, so that the endocarp in cross-section has the appearance of a star, or at least a star as we symbolise it! Endocarp is not a fancy word for seed, but is the term used to describe the woody structure containing one or more seeds. *E. stellaris* contains up to five seeds - even the common quandong endocarp can contain as many as five seeds within the spherical structure which we loosely call the seed. Members of the family Elaeocarpaceae occur in many countries, but several species in the genus *Elaeocarpus* are restricted to Australia. ***Medinilla balls-headleyi*** has no common name, but who would want to miss enunciating a Latin name such as has been bestowed on this plant! *Medinilla* honours a Spaniard, once Governor of the Mariana Islands, Don Jose de Medinilla y Pineda. And there was a Dr Balls-Headley. The plant can be thought of as a vine which begins life as an epiphyte, a lithophyte (a plant growing on a rock), or in the conventional manner with the seed germinating in the earth, but it can make a living above ground by feeding on compost trapped in a hollow branch or hollow tree trunk. The dark green leaves are handsome, glossy, three-veined structures, the pink flowers have a classical five-petalled structure, and the fruit are exquisite pink to purple goblet shaped structures, a bit like a fleshy gumnut. It is through finding the immature pink goblets on the ground that a *Medinilla* is usually discovered in a tree overhead. The family is Melastomataceae, which includes the common garden shrub *Tibouchina*.

There are numerous descriptions which could be added to this list. Some, like *Quassia baileyana* (small pink flowers), *Archidendropsis xanthoxylon*, *Gardenia actinocarpa*, *Idiospermum australiense* and *Lepiderema hirsuta* you can see or glimpse along the Murrumbidgee boardwalk. Glimpse is the more appropriate word in the case of the *Archidendropsis xanthoxylon* because the crown of the tree is hard to make out as it is more or less hidden from view by other, shorter trees. *Lepiderema hirsuta* is a trunk-fruited species a short way from the boardwalk, very obvious when its bright red fruit are popping open to reveal shiny black seeds partially encased in brightly coloured arils.

It is worth noting that many species and genera of the large Lauraceae family are commonly found on the Daintree Coast, such as *Beilschmiedia bancroftii*, *Cryptocarya oblata*, *Endiandra microneura*, *Litsea leafeana* and *Neolitsea dealbata*.



Even the **Daintree Satinash** currently described as *Syzygium erythrocalyx* aff. on the Murrumbidgee boardwalk is now considered to be a distinct species or sub-species by expert botanists, and in due course may receive a specific name of its own, because of characteristics which distinguish it from the *Syzygium erythrocalyx* of the Innisfail area. Others such as a shrub-sized *Wendlandia* species and a *Ceratopetalum* (a small tree from Mt Hemmant), the sweetly scented *Noahdendron nicholassi* (*Noahdendron* means the Noah tree) and a *Mesua*, also from Noah Creek will probably remain unseen by your visitors, and to list them becomes no more than a name-dropping exercise.



**Flipbook for other noteworthy plants**  
In conclusion, remember the area is home to numerous rare species, some so rare that they occur only in small pockets of the area visited by this handbook. Although some of the rare plants are quite common locally, if you look at a 1:10,000,000 map of Australia (a map slightly bigger than an A4 page) they would occupy a dot smaller than the size of a pinpoint.

## Ongoing evolution

There is a lot of emphasis on 'past' plants and primitives but what about the new ones? The Daintree Coast is not only important as a relict, but is a centre of ongoing speciation and evolution. It could be argued that the high level of endemism in the Daintree Coast is not only a result of past refugial conditions but is the result of rapid and quite spectacular evolution and speciation. The common argument is that stress promotes evolutionary change, however there is a school of thought where the opposite is true, that in the absence of stress there is a greater tolerance to genetic diversity within a species. This promotes variation which in rapid evolutionary times may become different enough to be classifiable as new species.

## The Primitives



**Ancient fork ferns - Today's clubmosses, tassel ferns and Lycopods**

**Ancient Psilophytes - Today's *Psilotum nudum***

In the Silurian and early Devonian periods, when the continents were still part of Pangaea and life was moving out of the seas onto land, ancestors of today's Lycopods began to evolve from algae. Modern-day descendants are much smaller than the giant tree-like clubmosses of the past. The Rock Tassel Fern *Huperzia squarrosa*, is a modern-day Lycopod found in the Daintree coast and is very similar in appearance and structure to *Baragwanthia longifolia* fossils found in Victoria, dated at 415 million years ago. The Rock Tassel Fern is considered a primitive species of Lycopod because the fertile fronds are the same as the infertile ones.



### 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 which later formed huge New South Wales coal deposits. Today the richest concentration of ferns in Australia is found in the Wet Tropics. Cooper's Tree Fern *Cyathea cooperi*, Rebecca's Tree Fern *Cyathea rebeccaee*, the Basket Fern *Drynaria rigidula* and the Rough Maidenhair Fern *Adiantum hispidulum* 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. Most of the conifers growing today in the Wet Tropics area favour cooler, upland areas, but the Brown Pine *Podocarpus grayae* is found on the Daintree Coast. This large lowland pine has narrow, sickle shaped leaves and derives its name from the Greek word *podos* meaning foot, referring to the fleshy red receptacle (stalk) of the fruit. Look for it along the Dubuji boardwalk.

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 "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 fertilize 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 that 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 seeds were obviously valued as a food source as many taller female plants had steps cut into the trunk to give access to the cone and seeds before they were spread by the White-tailed Rat. Botanists and seamen on

James Cook's 1770 expedition tried eating cycad seeds and 'had hearty fits of vomiting and purging'. Native people elsewhere in the world also eat cycad seeds and undertake similar careful preparation before eating them.

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. Aborigines did not eat the seeds of the Zamia Fern *Bowenia spectabilis*. It 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 involved in the process. 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 and give off a bouquet attractive to the insect.

In the days before conservation legislation, butchers in Mossman used the wonderful leaf of *Bowenia* - as shiny as any plastic imitation - to display in their windows and put under trays of meat.

## Primitive Flowering Plants

Since the Wet Tropics gained World Heritage listing, publicity about the area frequently mentions the many primitive flowering plant families represented here. Botanists are still divided over precisely what constitutes 'primitive' features, but it is generally accepted that there are 19 flowering plant families in the world with primitive features, of which 12 are in the Wet Tropics area. They are *Annonaceae*, *Austrobaileyaceae*, *Eupomatiaceae*, *Hernandiaceae* (including *Gyrocarpaceae*, although representatives of this family are not found in the Daintree Coast), *Himantandraceae*, *Idiospermeaceae*, *Lauraceae*, *Monimiaceae* (including *Atherospermataceae*), *Myristicaceae*, *Trimeniaceae* and *Winteraceae* families.

These are primitive flowering plants, not the real primitives such as the ferns, cycads and conifers.



Basket Fern



Deciding on specifics between ‘primitive’ and ‘advanced’ flowering plants is difficult because there are many plants which show some primitive features and some advanced features. Getting down to the ‘nitty gritty’ of differences means taking a close look at small details, including the sex life of plants! Many features relate to the size and form of pollen grains. Because pollen fossilizes readily, it is often the only ancient evidence on which scientists can base their theories.

#### Some basic differences are:

- 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 of the interesting flowering plants found in the Daintree Coast and considered to be “primitive” are:

#### Macassar Oil Tree, Perfume Tree, Ylang Ylang, *Cananga odorata* (Family: *Annonaceae*)

At a glance 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 frangipannis and the trees are grown in plantations for the production of perfume.

#### Orange Jacket, *Xylopia macleayi* (Family: *Annonaceae*)

This is a smallish tree to 10m with white, cream or yellow flowers and globular, yellow/orange/red fruit, opening to reveal a red, fleshy interior and bluish black seeds.

#### Bolwarra, *Eupomatia laurina* (Family: *Eupomatiaceae*)

This plant belongs to one of the oldest groups of flowering plants. Its reproductive organs may be elementary, but 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 one, 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, not petals) slowly close over, marking the end of the flower’s female phase.

Day two 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.

#### Australian Nutmeg, *Myristica insipida* (Family: *Myristicaceae*)

This tree is plentiful in the area and is a great favourite of many birds such as the Shining Starling, riflebirds and fruit pigeons. The Pied Imperial Pigeon is especially fond of this fruit and in Papua New Guinea is called the Nutmeg Pigeon. The seed has a distinct smell of nutmeg and the red aril which attracts the birds is also edible to humans – in small doses!

#### Sea Hearse, *Hernandia nymphaeifolia* (Syn: *Hernandia peltata*) (Family: *Hernandiaceae*)

The name ‘Sea Hearse’ is also used in Malaysia for a very closely related species. Although trees are not common along the shore they are very distinctive. The leaf is egg-shaped but tapering 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.

#### Ribbonwood, *Idiospermum australiense* (Family: *Idiospermaceae*)

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 insect ‘singles bars’. 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.



#### Flipbook for *Idiospermum*

## Special Animals

Most animals are more mobile than plants, and so there are fewer animals unique to the Daintree than there are plants, with the probable exception of insects.



One animal which is known to occur only in the Greater Daintree is **Bennett's Tree Kangaroo** *Dendrolagus bennettianus*, but to catch sight of one would be a very rare occurrence. This tree kangaroo is almost the largest arboreal marsupial in Australia. A male weighing up to 13.7kg is only outweighed by a big Koala which can reach 14.9kg. Tree kangaroos are staid rather than active animals, only showing a turn of speed if they are alarmed when on the ground. Their diet is almost entirely vegetarian, with Umbrella Trees, Celery Wood (*Polyscias sp.*), Button Wood (*Glochidion sp.*), Scaly Ash (*Ganophyllum falcatum*), Birdsnest and Elkhorn Ferns recorded on the menu. All of these plant species are quite common and widespread, but not so the tree kangaroo, which is vulnerable to predation and sensitive to disturbance.

The **Daintree River Ringtail Possum** *Pseudochirulus cinereus* is found on some of the ranges above 900m. This possum is one of four rainforest ringtails which are endemic to the Wet Tropics forest.

The Daintree River Ringtail received its name because its range includes the Mount Windsor Tablelands and Mount Carbine Tablelands where the Daintree River rises. Daintree River Ringtails are solitary vegetarian animals which shelter by day either in naturally occurring hollows in branches and tree trunks or in large globular 'nests' constructed by arranging leaves and leafy twigs amongst the branches of a suitable tree. Females usually give birth to twins. Owls, pythons and sometimes Wedge-tailed Eagles are among the predators of this small possum. It is not a species which will be encountered by your visitors unless they take an upland spotlighting trip in a suitable location, but it is a species which should be mentioned in any discussion of Greater Daintree mammals.

The **Thornton Peak Skink** *Calyptotis thorntonensis* measures only 3.5cm and is known only from a few localities on the Thornton Peak range, where it inhabits upland rocky areas and uses fallen wood and rocks for shelter.

## Notable Invertebrates



The **giant blue earthworm** may grow to more than 1m in length. The worms have been found in a pig's stomach at Cape Tribulation.

The worm's mucous coating is supposedly toxic so this worm should not be handled.



The **butterscotch snail** is a flat, yellow litter snail which looks like a butterscotch. It preys on other snails and soft invertebrates often larger than itself.



The **velvet worm** or peripatus (*Onchophora sp.*) is a predatory worm-like animal found under logs and in litter in the rainforest. It has a pair of leglike appendages on every segment so it is classified as an arthropod (animals with a segmented body and jointed limbs such as spiders, insects and crabs).

It immobilises its prey by squirting jets of slime from papillae on either side of the head. Victims such as crickets or beetles find themselves trapped by the quickly hardening glue-like slime.



The **Thornton Peak/Mt Finnegan spiny crayfish** (*Euastacus robertsi*) is a spiny cray found in just a few upland watercourses.

It frequently emerges from the water to move between streams. The cherubim or freshwater prawn is the common crustacean of lowland streams and is quite unrelated to the crays. It emerges to feed at night when it can be easily seen by torchlight because of the red glow reflected by its eyes.

**Amblipygids** are a primitive group of arachnids related to the scorpions. They are confined to the wet tropics and are characterised by large, spiny forelegs used to trap prey. Amblipygids are strictly nocturnal, and use special sensors at the tips of their front legs as tactile sensors. Unlike spiders their abdomens are noticeably segmented. With their flattened bodies adapted for living in crevices, they superficially resemble huntsman spiders, but they are small (about 1 cm long). The females carry their young on their backs like scorpions.



Daintree River Ringtail Possum with twin babies

**Bird-eating or theraphosid spiders** are our largest spiders. The females excavate long burrows often in the upper banks of creeks or beneath tree buttresses in the rainforest. They remain there by day and emerge at night. All prey is taken close to the burrow – usually ground-frequenting animals such as skinks, frogs and large arthropods. When provoked these spiders rear up and prepare to strike. The venom can cause an extreme reaction although no deaths have been reported.



The **Petalurid dragonfly** (*Petalura ingentissima*) is one of the world's largest dragonflies with a wingspan of 160mm. Its ancestors date back to the Triassic era 245 million years ago. Unlike most dragonflies the nymphs are partially terrestrial, living in burrows in swamps and beside creeks. The dragonfly is sometimes seen flying along the creeks between the Daintree River and Cape Tribulation during the wet.



The **Amphipterygid damselfly** (*Diphleblia euphanaeoides*) is found in the sunlit sections of rainforest creeks. The male is bright black and blue while the female is duller. The nymphs are predators in fast flow sections of rainforest creeks.



The **Pandanus stick insect** (*Megacrania sp.*) is found only on Pandanus species between Mission Beach and Cape Tribulation. By day it lies along the midline of the pandanus leaf, highly camouflaged by its blue-green colouring. It retreats into the leaf base when threatened. If disturbed it regurgitates a pungent white, peppermint-smelling fluid made from the chemicals in the host plant (hence its nickname of peppermint stick insect).

**Macleay's Spectre** (*Extatosoma tiaratum*) is one of Australia's most spectacular stick insects. The females can't fly. They are heavy bodied with large flanges on the leg segments and the abdomen is strongly upturned. The male is more slender, fully winged and flies readily. They are sometimes found on shrubs and trees in rainforest but are more commonly found in open woodland and gardens.

The **forest crickets** (*Penalva sp.* and *Papuastus sp.*) are large, brown, wingless crickets of the forest floor and understorey. They live in tunnels by day and emerge at night to feed on decaying organic matter. Their hindlegs are very powerful and they can leap several metres if disturbed. They are not known to make the usual cricket chirp and have large jaws which can deliver a painful bite. The Papuan forest cricket (*Papuastus sp.*) is distinguished by its white knees.

The **Wait-a-while cricket** (*Phricta sp.*) is common at night in lowland fan palm forest. In the dry season the nymphs with their extremely long segmented antennae are seen in the lower canopy feeding on the rain of leaves and flowers dropping from above. As they mature they gradually move up to the higher canopy. The adults are giants among crickets and have

extremely spiny hind legs which can inflict a wound. Females only descend to the ground to lay their eggs.

The **Rhinoceros beetle** (*Xylotrupes gideon*) is one of the largest beetles attracted to house lights in the Daintree Coast at all times of the year. The males are very different from the females, bearing large 'horns' which are probably used in sexual combat for females. Both sexes 'squeak' loudly, the sound being produced when the beetle rubs its head and thoracic segments together.

**Fireflies** in the genus *Pteroptyx* engage in spectacular displays of synchronised flashing in cleared areas dominated by guinea grass and isolated pioneer trees such as buttonwood (*Glochidion sp.*). Large numbers of males – sometimes over 1000 individuals – are attracted to isolated trees and fly around them. They flash in sequence every three to five seconds from near the top of the trees down almost to ground level. The displays last most of the night, and serve to attract females. Mating takes place on nearby vegetation.



The **Hercules moth** (*Coscinocera hercules*) belongs to the emperor moth family and is Australia's largest moth. The female has no mouth parts so she lives only as long as her fat deposits last. The hindwings on the male are longer and narrower than those on the female. She emits chemicals called pheromones which attract the males from long distances. After mating she lays 80-100 eggs on selected rainforest host plants including bleeding heart, buttonwood and celerywood, some of which have relatively toxic foliage. The massive larvae is bright blue with yellow and orange markings and grows to over 100mm.

## Further information

*Moths of Australia* I.F.B. Common 1990  
*Grasshopper Country* D. Rentz. Inkata Press 1997  
*The Insects of Australia* Vols 1 and 2. Melbourne University Press 1991  
*A Field Guide to Insects in Australia* Paul Zborowski & Ross Storey, Reed New Holland 1995

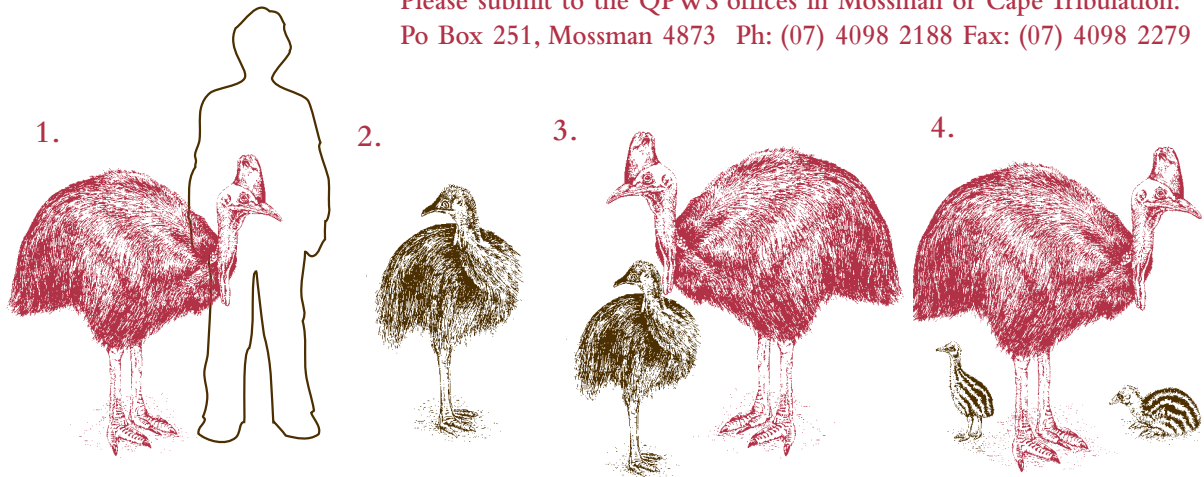
## 4. Useful extras

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# Cassowary Sighting Sheet

Please submit to the QPWS offices in Mossman or Cape Tribulation:  
Po Box 251, Mossman 4873 Ph: (07) 4098 2188 Fax: (07) 4098 2279



1. Adult up to 2m tall

- ☐ glossy black plumage
- ☐ helmet or casque on top of head
- ☐ brilliant blue neck with red wattles
- ☐ difficult to tell male and female apart

2. Independent sub-adult

- ☐ brown plumage (black plumage by 3 years)
- ☐ smaller wattles, orange-red
- ☐ beginnings of casque

3. Male adult with brown older chick.

- ☐ Any time after 5-16 months the chicks are chased away

4.

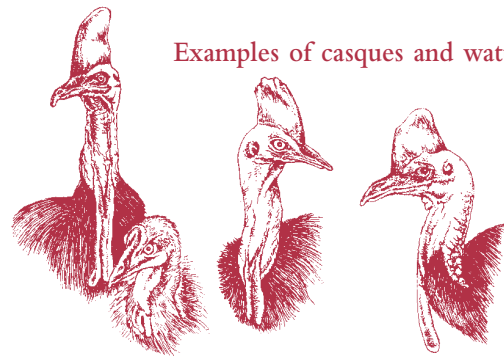
4. Male adult with striped chicks

- ☐ chicks remain striped from 0-5 months
- ☐ an adult with chicks is always a male

If you are fortunate enough to see a Cassowary we would appreciate any information. Any photographs you take of Cassowaries help us to identify individuals, however, do not endanger yourself to take one. Please send to the address above, with this sighting sheet.

Maintaining Cassowary sighting data is important for species conservation. Records of the number, age and sex of the local population are provided to scientific and government agencies. Thank you for your contribution to Cassowary conservation.

Examples of casques and wattles



## Information about yourself

Name

Address

Phone no.

Date and time of sighting

Location

## Information about the sighting

Please tick the appropriate boxes

Adult  Sub-adult

Chicks if present (number)

Striped  Plain

### Feathers

Body: Black  Brown

Tail: Long  Short

Size Large  Medium  Small

Other comments

Cassowaries are large birds and have been known to become aggressive. Please do not approach birds and under no circumstances attempt to feed a Cassowary. This will only encourage the Cassowary to approach people on future occasions. For more information contact:

Daintree Cassowary Care Group, PMB 28 Mossman 4873 Ph: (07) 4098 9171

# Safety & Comfort

Australia's tropical rainforest is a relatively safe place. Your visitors are unlikely to get hit by a bus or mugged. However, watch for these plants and animals and your day should be trouble-free.

## Snakes

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A snake does not wish to bite humans and waste venom on prey too large to consume. Most will retreat if possible, and even when cornered, will often withhold venom when biting. The golden rule is not to meddle with snakes and wear boots and jeans in snake country. The most important action to take following a snake bite is to prevent the poisons from moving into the general circulation. The venom initially spreads through tissues close to the bite and collects in lymphatic vessels from which it moves to the blood stream. The lymphatic vessels run very close to the skin so an elastic bandage or clothing wrapped firmly around the bitten limb can slow down the progress of the venom. Since the flow results from muscle movement, a splint to immobilise the limb will help. Old-fashioned methods of cutting the wound and using tourniquets are OUT!

- Always carry an elastic bandage when in the bush.
- If bitten, do not panic or rush around. Move as little and as calmly as possible.
- Do not try to kill or capture the snake which is then likely to cause more damage.
- Do not wash the wound as traces of venom will help medical authorities to identify the snake.
- Wrap the wound firmly as if for a sprain. Keep it on - do not remove for a look. Make a splint if possible.
- Calmly get to the nearest doctor or hospital, phoning ahead if possible.

## Jellyfish

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There are several types of marine stingers present in coastal and estuarine waters of tropical Queensland during the months of October through to May. It is best not to swim. If you do, wear protective clothing. 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 is obtained.

## Crocodiles

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Estuarine crocodiles live in coastal rivers, estuaries and the sea of the Daintree Coast. They are very dangerous. Don't swim in these waters if there is any risk of crocs being present.

## Cassowaries

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Cassowaries are potentially dangerous and must be treated with caution. Stay well clear but don't run away from them if confronted. Back away slowly. Do not feed Cassowaries.

## Stinging Tree

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The Stinging Tree hairs penetrate the skin and whenever the small muscles under the skin contract in response to temperature changes, the hairs cause renewed pain many months after the initial sting. Dr Hugh Spencer's first aid recipe is to first ensure the victim does not rub the sting area. Put tissues on the affected spot and wet with 10% hydrochloric acid. Pat into place and leave 15-20 minutes. Although it stings, it destroys the proteins that cause the pain. This can be repeated if necessary. Dry the area and apply depilatory strips used for hair removal. Pat gently into place until completely in contact with the skin, then rip it off against the hair grain. In wet conditions use a sugar-based depilatory spread onto cloth strips. Do not use the salve which may be supplied with the wax.

## You

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In real terms you and your visitors present the biggest danger to your own safety. Keep to tracks, avoid slippery surfaces and fast flowing water. Use common sense and everyone will enjoy their visit.

## Further Information

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- Provide raincoats or umbrellas, insect repellent, sunblock and fresh water when necessary. A first aid kit is essential, and needs to be checked regularly.
- A Registered Nurse is based at the Cow Bay Health Clinic on Tea Trea Road (phone 4098 9296) from Monday to Friday 8.30am to 5pm. For after hours emergencies phone 000.

# Code of Conduct

## Alexandra Range Lookout - Walu Wugirriga

Code of Conduct for Commercial Tour Operators

### Safety

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**1. Restrict your speed to 20km/h as you approach the Lookout and be aware of traffic turning across the traffic flow into the Lookout as you are driving south.** Exercise extreme caution when you turn off the Cape Tribulation Road into the Lookout. It is safer to enter when driving south.

**2. Only vehicles without trailers and less than 8 m long may enter the site.** The site has been designed for vehicles less than 8m long. Longer vehicles and vehicles with trailers will damage the landscaping and are not allowed to use the site.

**3. Warn passengers if you are dropping them off on the access road.** The mini-bus parking bays (vehicle parking bays 1-6 on the diagram) have been designed so that they are drive-in drive-out, eliminating the annoying reverse alarm noise. Mini-buses that park on the righthand side coming into the site (vehicle parking bays 4, 5 and 6 on the diagram) will need to let passengers out on the access road. Extreme care is needed to ensure the highest safety standards for your guests and other visitors.

**4. Encourage guests to use the pathway and not cross over through the traffic.** A pathway has been provided around the edge of the site from the passenger drop-off points to the Lookout on the south side. Encourage your passengers to use the pathway rather than cross through the traffic.

**5. Drive with extreme caution and less than 20km/h within the site.** With the large number of vehicle movements during peak times, great care is needed as many visitors will be unfamiliar with the site. A speed limit of 20km/h within the site has been adopted.

### Operations

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**6. During peak times keep your stay under 15 minutes.** To keep congestion on the site to a minimum during peak times, average length of stay during these peak times needs to be less than 15 minutes. This is the approximate time taken for each 'pulse' of ferry traffic to arrive at the site. Toilets, water and rubbish bins have not been provided to encourage a brief stay.

**7. Ask your guests to keep to the pathways provided and please no short-cuts through the landscaped and revegetation areas.** The landscaping features species native to the Daintree area. Please ask your guests to give the shade trees and understorey vegetation every chance of survival.

### Visitor Enjoyment

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**8. Please do not enter the site if you don't intend to park and view.** If there are no vehicle parking spaces, consider visiting the Lookout on your return journey. The site can not operate and maintain its qualities if it is used as a drive-through site. It is a 'park, hop out and enjoy the view' site.

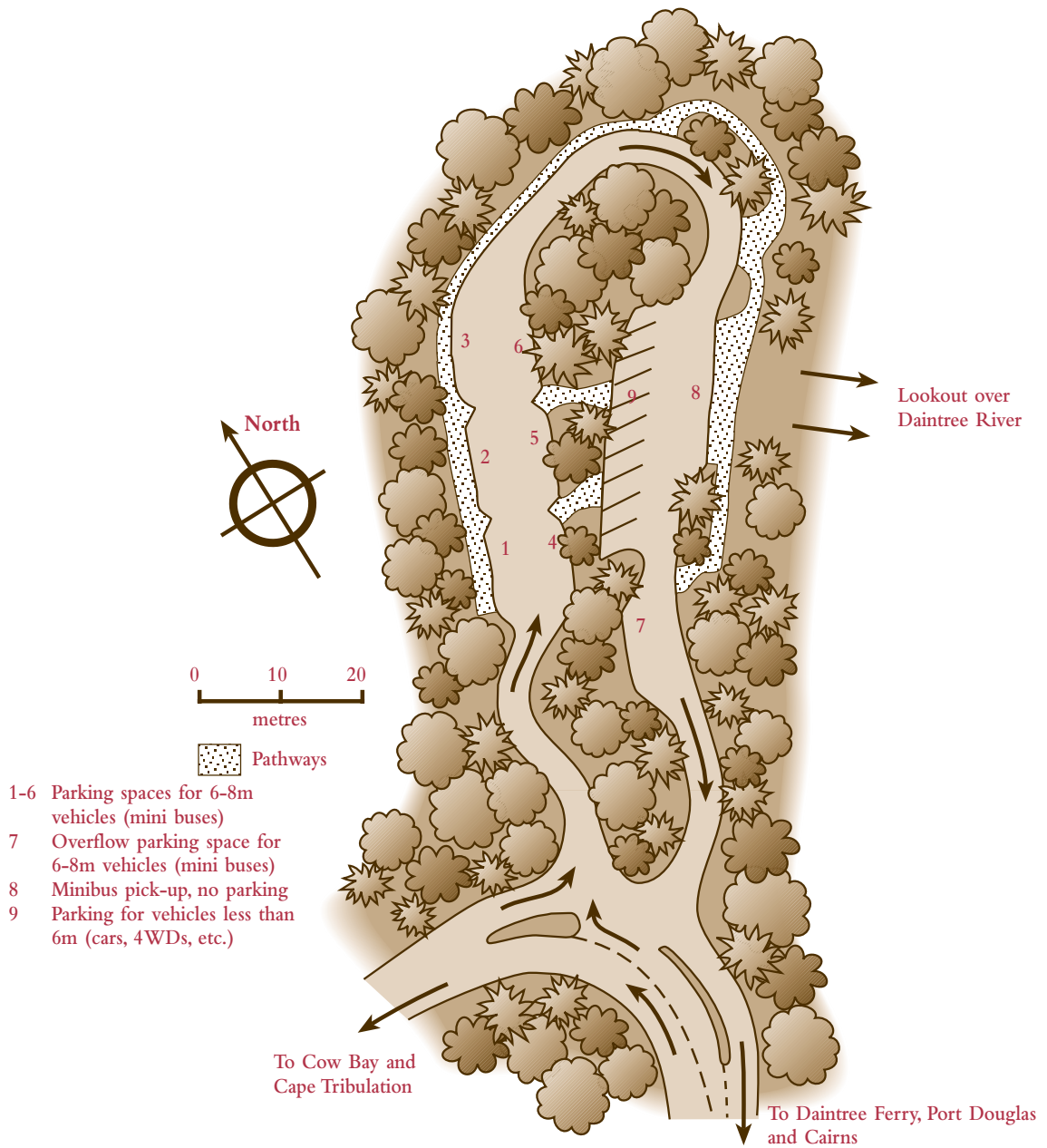
**9. Please turn off your engine while parked in the site.** Engine noise, exterior air conditioners and exhaust fumes are not what visitors come to experience. You may wish to explain to your guests the reason why the motor and air conditioning needs to be turned off.

**10. Only use the passenger 'pick up' point for that purpose.** There is a passenger pick-up point beside the major southern viewing area overlooking the Daintree River mouth. This is not a parking spot.

### Improving the Code of Conduct

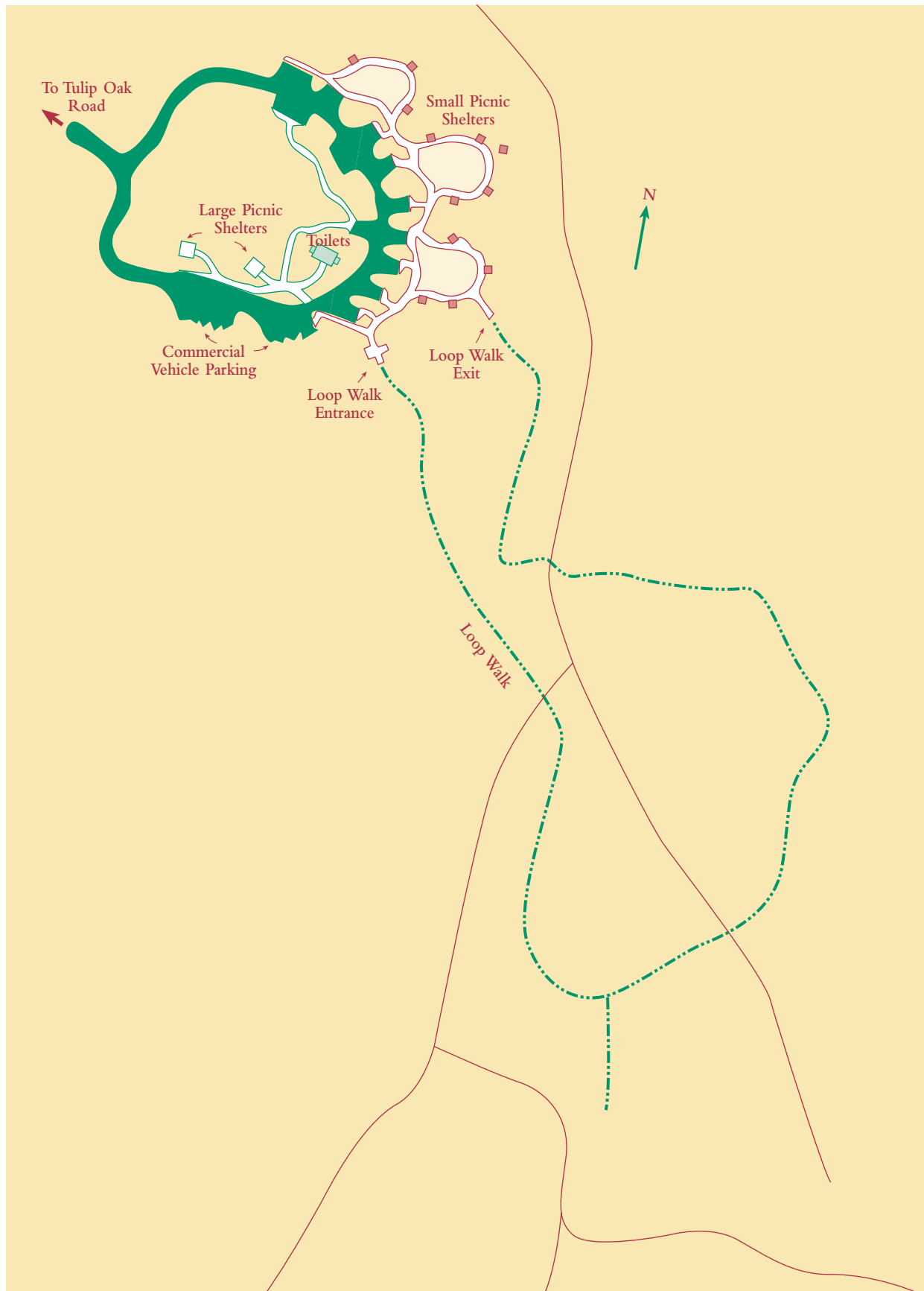
This code was developed by the Wet Tropics Management Authority and Queensland Parks and Wildlife Service, in consultation with the Far North Queensland Tour Operators Association, the Douglas Shire Tourism Association and Douglas Shire Council. Thank you for your cooperation in supporting the code. Your support will ensure the continued enjoyment and protection of this outstanding World Heritage site. If you have any suggestions or problems, please call QPWS, Mossman on (07) 4098 2188. We hope you and your visitors enjoy your visit.

# Alexandra Range Lookout Site Map

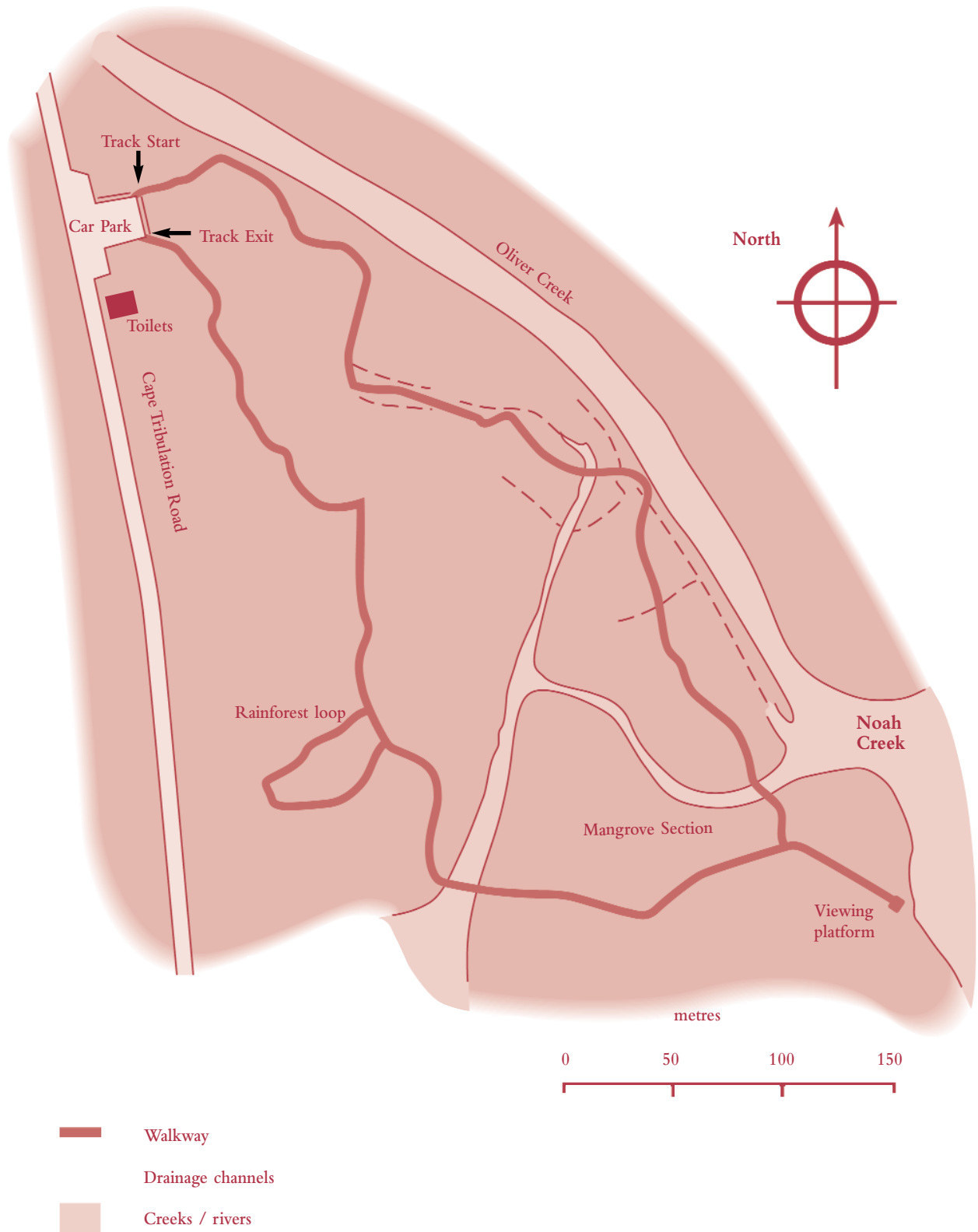




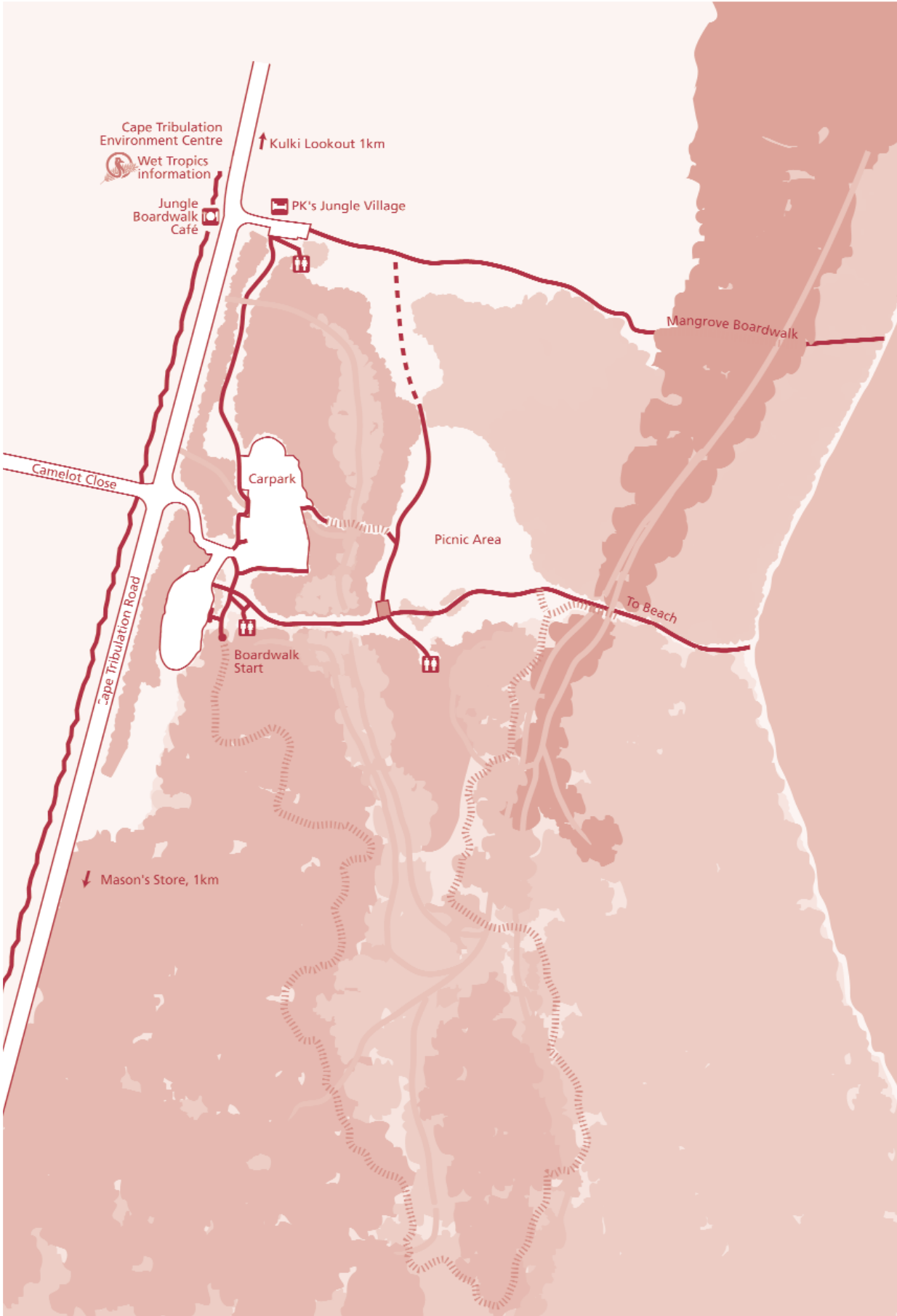
# Jindalba Site Map



# Marrdja Site Map



# Dubuji Site Map



# Kulki Site Map





# Flipbook Index

Following is a list of illustrations found in the Flipbook:

- Map of Daintree River area showing billabongs and wetlands
- Fishes of the Daintree River
- Mangrove wetland transect - Daintree River
- Mangrove Life
- Daintree Coast Map showing private land subdivisions, Buyback blocks
- Daintree Coast Map showing vegetation clearing
- Cassowary with chick
- Daintree Coast Map showing Cassowary ranges
- Feral cat cartoon
- Musky Rat-kangaroo
- Breakup of Gondwana
- Boyd's Forest Dragon
- Lt James Cook's voyage
- Balanophora
- Striped Possum with Young
- Diagram of Lowland Rainforest Structure
- Bennett's Tree-kangaroo
- *Xanthostemon* and *Xanthophyllum* spp. (Xanthos = yellow)
- *Endiandra* sp.
- Several Noteworthy Plants
- *Gardenia actinocarpa*
- *Idiospermum australiense*

## Acknowledgements

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### Ferns 2-21

Basket Fern *Drynaria rigidula* 3-16  
Cooper's Tree Fern *Cyathea cooperi* 2-15, 3-16  
Rebecca's Tree Fern *Cyathea rebecca* 2-15, 3-16  
King Fern *Angiopteris evecta* 2-20, 2-23  
Rough Maidenhair Fern *Adiantum hispidulum* 3-16

### Figs

and wasps 2-22  
cluster 2-27, 2-29  
strangler 2-38  
Variegated Fig *Ficus variegata* 2-20, 2-27, 2-29  
*Ficus congesta* 2-27, 2-29  
Flame tree *Brachychiton acerifolius* 2-30  
Fragrant Boxwood *Xanthophyllum fragrans* 3-14  
*Gardenia actinocarpa* 2-39, 3-15  
Golden Penda *Xanthostemon chrysanthus* 2-36, 3-14  
Grey or Velvet-leaf Bollywood *Neolitsea dealbata* 3-15  
*Gymnostoma australianum* 2-31, 3-14  
Brown Kurrajong *Commersonia bartramia* 2-15  
Kwila *Intsia bijuga* 2-42, 2-50  
Lawyer cane *Calamus* spp. 3-1, 3-3  
*Lepiderema hirsuta* 3-15  
Little Evodia *Evodiella muelleri* 2-19  
*Macaranga* sp. 2-15  
**Mangroves 2-10 to 2-12**  
Looking Glass 2-4  
Cedar Mangrove *Xylocarpus moluccensis* 2-10  
Grey Mangrove *Avicennia marina* 2-11

Milky Mangrove *Excoecaria agallocha* 2-10  
 Cannonball mangrove *Xylocarpus granatum* 2-10, 2-11  
 Red, Stilt or Spider Mangrove *Rhizophora stylosa* 2-11  
 Orange Mangrove *Bruguiera gymnorrhiza* 2-11  
*Ceriops* sp. 2-11  
 Eucalypt Mangrove *Avicennia marina* subsp. *eucalyptifolia* 2-12  
 Pornupan Mangrove *Sonneratia alba* 2-12  
 Holly-leaf Mangrove *Acanthus ilicifolius* 2-12  
 Black Mangrove *Lumnitzera littorea* 2-12  
 Yellow Mangrove *Ceriops tagal* 2-12  
 Matchbox bean vine *Entada phaseoloides* 2-48, 3-3,  
*Medinella Balls-headleyi* 3-15  
**Melaleuca** sp. 2-2, 2-3  
 Narrow-leaf Paperbark *Melaleuca leucadendra* 2-40  
*Mesua* sp. 3-15  
 Milky Pine *Alstonia scholaris* 2-7, 2-20, 2-23  
 Mistletoe Plants 2-38  
 Moreton Bay Ash *Eucalyptus tessularis* 2-49  
 Mueller's Silky Oak *Austromuellera trinervia* 3-14  
 Native banana *Musa banksii*, *M. jackeyi* 2-15, 2-16  
*Noahdendron nicholassi* 3-15  
 Noah's Walnut *Endiandra microneura* 3-15  
 Northern Silky Oak *Cardwellia sublimis* 2-44  
 Orange Jacket *Xylocarpus maccreai* 3-17  
 Orchids 2-17, 2-37, 3-3  
 Paperbark Mahogany 2-40  
 Pink Evodia *Melicope elleryana* 2-19  
 Pongamia *Pongamia pinnata* 2-50  
 Porcelain fruit tree *Fagraea cambagei* 2-22  
**Quandongs**  
 Blue Quandong *Elaeocarpus angustifolius* 2-2, 2-44, 3-9, 3-14  
*Elaeocarpus stellaris* 3-14  
 Kuranda Quandong *Elaeocarpus bancroftii* 2-2  
*Quassia baileyana* 3-15  
 Resurrection Plant *Borya septentrionalis* 2-35, 2-36  
 Raphidophora *Raphidophora pachyphylla* 3-1, 3-3  
 Red Cedar *Toona ciliata* 2-4  
 Red Ash or Sarsparilla *Alphitonia petriei* 2-15  
 Red Stringybark 2-40  
 Ribbonwood *Idiospermum australiense* 2-26, 2-29, 3-15, 3-17  
 Rock Tassel Fern *Huperzia squarrosa* 3-15  
 Sarsparilla or Red Ash *Alphitonia petriei* 2-15  
 Scaly Ash *Ganophyllum falcatum* 3-18  
 Scrub Breadfruit *Pandanus monticola* 2-41  
 Sea Hearse *Hernandia nymphaeifolia* 3-17  
 Spicy Mahogany *Dysoxylum papuanum* 2-20  
 Spur Mahogany *Dysoxylum pettigrewianum* 2-21, 2-23  
 Supplejack *Flagellaria indica* 3-3  
 Stinging Tree *Dendrocnide moroides* 3-3, 4-2  
 Taro 2-28  
 Tarzali Silkwood *Cryptocarya oblata* 3-17  
 Umbrella Tree *Schefflera actinophylla* 2-18, 3-18  
 Ylang Ylang (Perfume Tree) *Cananga odorata* 2-7, 3-9, 3-17  
 Yellow Bean *Ormosia ormondii* 2-30  
 Yellow Evodia *Euodia bonwickii* 2-19  
**Wattle** *Acacia* spp. 2-40  
 Brown Wattle 2  
*Wendlandia* sp. 3-15  
 White Bean *Storckellia australiensis* 3-13  
*Xanthostemon verticillatus* 3-14  
*Xanthostemon graniticus* 3-14  
 Zamia Palm *Lepidozamia hopei* 2-38, 2-39, 3-16, 4-3  
 Zamia Fern *Bowenia spectabilis* 2-38, 2-39, 3-16, 4-3

