

Plant Formations in the Queenslandian BioProvince

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Queenslandian Tropical Rain Forest

These are found in patches along the wetter parts of the northeastern coast of Queensland although they only reach their maximum floristic diversity in stands between Cooktown and Ingham. However, because of the complexity of these forests it is difficult to assign broadly recognizable forest types and there is a tendency for certain species, such as *Lindsayomyrtus brachyandrus* or the endemic *Backhousia bancroftii* (Myrtaceae) to monopolize the upper canopy of small stands. Nevertheless, these forest support a multitude of other canopy trees including many endemic taxa such as *Aceratium doggrellii* (Elaeocarpaceae), *Agathis atropurpurea* (Araucariaceae), *Alphitonia whitei* (Rhamnaceae), *Argyrodendron peralatum* (Sterculiaceae), *Austromuellera trinervia* (Proteaceae), *Balanops australiana* (Balanopaceae), *Beilschmiedia bancroftii* (Lauraceae), *Blepharocarya involucrigera* (Blepharocaryaceae), *Canarium muelleri* (Burseraceae), *Doryphora aromatica* (Monimiaceae), *Ficus destruens* (Moraceae), *Flindersia acuminata* (Rutaceae), *Geissois biagiana* (Cunoniaceae), *Idiospermum australiense* (Idiospermaceae), *Sphenostemon lobosporus* (Sphenostemonaceae), *Toechima daemeliana* (Sapindaceae) and *Xanthostemon chrystanthus* (Myrtaceae). Several tree species, such as *Dysoxylum schiffneri*, are caulicarpous. At mid canopy level the endemic palm *Licuala ramsayi* (Arecaceae) is often the main component but other palms such as the endemic *Archontophoenix alexandrae* or *Oraniopsis appendiculata* may be present together with tree ferns (mainly species of *Cyathea*). The ground flora is largely dominated by regenerating trees and shrubs such as the endemic *Hodgkinsonia frutescens* (Rubiaceae). Vines are also conspicuous with species such as *Bambusa moreheadiana*, *Rhaphidophora australasica* and the endemic *Austrobaileya scandens* (Austrobaileyaceae). Equally, epiphytes are also prolific particularly ferns such as *Asplenium australasicum*, with fronds up to 50 cm long, the endemic *Platyserium superbum* (Polypodiaceae) and orchids such as *Bulbophyllum* and *Dendrobium* species.

Queenslandian 'Dry' Rain Forests

Evidence of former extensive rain forest in northern Australia comes from the relict occurrences of various rain forest species in semi-arid zones. These can be found in various inland areas of Queensland such as near Injune. *Cadellia pentastylis* is often the sole dominant but endemic trees such as *Brachychiton australis*, *B. grandiflorus*, *B. rupestris* (Sterculiaceae) and *Macropteranthes leichardtii* (Combretaceae) may be present in some stands. Shrub layer species, which range in height from 1-3 m, include *Alectryon subdentatus*, *Canthium odoratum*, *Elaeodendron australis*, *Geijera parviflora*, *Heterodendron diversifolium*, *Notelaea microcarpa*, *Pittosporum phylliraeoides*, *Spartothamnella juncea* and the endemic *Backhousia angustifolia* (Myrtaceae) and *Hovea longipes* (Fabaceae). Lianas are common with species such as *Cassus opaca*, *Jasminum simplicifolium*, *Parsonia eucalyptophyllum* and the endemic *Marsdenia microlepis* (Apocynaceae), but epiphytes are less so as compared with more typical rainforest but may include the orchid *Cymbidium canaliculatum*. The herbaceous layer contains grasses such as *Ancistrachne uncinulatum*, *Stipa ramossissima* and the sedges *Carex inversa* and *Cyperus gracilis*.

Queenslandian Ironbark Forest

Ironbarks are *Eucalyptus* species of the sub-genus *Symphyomyrtus* and distinguished by their deeply furrowed, dark-coloured bark. They usually occupy soils of low fertility and cover large tracts of eastern Queensland from the coast and across the Grand Divide.

They are mainly dominated by either the endemic *Eucalyptus cullenii* or the endemic *E. drepanophyllum* (Myrtaceae), but factors that delimit these species is not clearly understood and there is considerable overlap in their distributions. *Eucalyptus drepanophyllum* is the most common species in eastern Queensland extending over vast areas, and in favourable areas it can reach height of 30 m or so. Other associated eucalypts include the endemic *E. decorticans* and *E. whitei*. In the under story small trees or shrubs are rare but may include *Erythrophleum chlorostachys*, *Grevillea striata*, *Hakea lorea*, *Petalostigma pubescens* and the endemic *Acacia longispicata* (Fabaceae) and *Lysicarpus angustifolius* (Myrtaceae). At ground level the grass is always dense with species of *Bothriocloa ewartiana*, *Heteropogon contortus* and *Themeda australis*. *Eucalyptus cullenii* is less extensive and only dominates small patches on the Cape York Peninsula mainly on the Great Divide. It can reach heights of 12 m. Associate species include other eucalypts such as *E. dichromophloia*, *E. tetradonta* and the endemic *E. staigeriana* (Myrtaceae). In central Queensland, forest dominated by *Angophora costata* often forms mosaics and ecotonal associations with ironbark communities. These include various other trees particularly the endemic eucalypts *Eucalyptus cloëziana* and *E. tenuipes* and can form a closed canopy up to 30 m high. A small tree or large shrub layer is usually present with species such as *Acacia complanata*, *Grevillea longistyla*, *Leptospermum attenuatum*, *Notelaea longifolia* and the endemic *Acacia flavescens* (Fabaceae), *Boronia bipinnata* (Rutaceae) and *Dodonaea vestita*. The herbaceous layer, on the other hand, is usually poorly developed with just scattered plants of *Cymbopogon refractus* and *Triodia mitchellii*.

Queenslandian Box Woodlands

These, like ironbark forests, are also dominated by eucalypts of the sub-genus *Symphomyrtus*, but box trees are usually distinguished by their small boles. They also tend to occur in dryer areas and occupy a zone, which separates the wetter coastal areas from the arid interior. Some woodland extends to the coast but here they are mainly confined to rain shadow areas. In Queensland they are typically dominated by either *Eucalyptus normantonensis* or one of the endemic species: *E. brownii*, *E. leptophlebia*, *E. microneura* or *E. orgadophila* (Myrtaceae). However, these species are all closely related and although they tend to occur in latitudinal sequence there are some overlaps which lead to the intergradation of species and the development of ecotonal associations. In addition to levels of rainfall, soil type also plays a part in their distribution. *Eucalyptus leptophlebia* and *E. microneura*, which can reach heights of 15 m, occur on Red and Yellow Earths and have *Erythrophleum chlorostachys* as a regular associate. *Eucalyptus orgadophila* forms woodlands up to 16 m high and can be found on either basalt outcrops or Black Earth. *Eucalyptus normantonensis* forms smaller woodlands up to about 13 m high and are mainly found on alluvial flats, while *E. brownii* typically occupies lower slopes adjacent to watercourses or in depressions on fine-textured solondized-solonetz soils, but these woodlands are mainly open with trees reaching about 16 m tall.

Queenslandian *Acacia shirleyi* Woodland

Woodlands dominated by *Acacia shirleyi* are characteristic of rocky outcrops and steep slopes mainly in the tropics. Associated trees may include various eucalypts, which in Queensland comprise species such as *Eucalyptus citriodora*, *E. crebra*, *E. exserta* and the endemic *E. howittiana* (Myrtaceae). Shrubs are usually absent and the herbaceous layer mostly comprises grasses. These include *Aristida caputmedusae*, *Cympopogon refractus* and the endemic *Cleistochloa subjuncea* (Poaceae).

Queenslandian *Acacia harpophylla* Woodland

These woodlands are largely restricted to Queensland and mainly confined to clay soils on flat or undulating terrain. *Acacia harpophylla* may occur in pure stands with a few under storey shrubs such as *Carissa ovata*. However, it is usually found in association with other trees such as *Eucalyptus microtheca*, *E. populnea*, *E. thozetiana*, *Terminalia oblongata* or the endemic *Eucalyptus cambageana* (Myrtaceae). Typical under storey species in the north include the endemic *Brachychiton rupestris* (Sterculiaceae) and *Macropteranthes leichhardtii* (Combretaceae). Grasses of the genera *Chloris*, *Paspalidium* and *Sporobolus* usually dominate the ground layer.

Queenslandian Cape York Heath and Scrub

Sometimes referred to as 'wet desert' because of the low stature of this vegetation but occurring in a climate where you would normally expect to find rain forest. However, the soils are nutrient poor and have particularly low levels of phosphorus. The vegetation forms a mosaic of open and closed communities. In open areas there are patches of scrub mainly dominated by *Banksia dentata* and the endemic *Melaleuca saligna* (Myrtaceae) and *Thryptomene oligandra* (Myrtaceae). In other areas they comprise a form of closed heath no more than about 2 m tall dominated by *Fenzlia obtusa* and *Leptospermum fabricia*, but also including shrubs like *Choriceras tricorne*, *Jacksonia thesioides*, *Sinoga lysicephala* and the endemic *Acacia calyculata* (Fabaceae), *Boronia bowmanii* (Rutaceae), *Morinda reticulata* (Rubiaceae) and *Neoroepera banksii* (Picrodendraceae). In the herbaceous layer *Schoenus sparteus* and *Xanthorrhoea johnsonii* are the most common species, but also noteworthy is the presence of the three insectivorous plants *Byblis liniflora*, *Nepenthes mirabilis* and *Utricularia chrysantha*. Heath and scrub also replaces rain forest on mountains such as Mount Bellenden-Kee and Mount Finnegan. Here the characteristic species include *Agapetes meiniana*, the endemic *Dracophyllum sayeri* (Epacridaceae), *Leptospermum wooroonooran* (Myrtaceae) and *Rhododendron lochae* (Ericaceae), together with species of *Austromyrtus*, *Balanops*, *Bubbia*, *Drimys*, *Orites* and *Quintinia*. The two members of Ericaceae (*Agapetes* and *Rhododendron*) provide affinities with the floras of New Guinea and Asia, while *Dracophyllum* provides links with southeastern Australia and New Zealand. *Banksia dentata* is the only species of *Banksia* to occur in the tropics and extends into New Guinea.

Queenslandian Heaths of Rocky Outcrops (Glasshouse Mountains)

Heaths can be found in many rocky situations where the soil is too thin to support trees. The Glasshouse Mountains in southeastern Queensland are largely composed of volcanic plugs of trachyte. On the steep slopes a number of herbaceous communities have developed. The most important plant species are the two ferns *Cheilanthes tenuifolia* and *Culcita dubia*, and two endemic angiosperms *Borya septentrionalis* (Boryaceae) and *Micraira subulifolia* (Poaceae). Shrubs, particularly *Calytrix tetragona* and *Leptospermum brackyantrum*, become established in the herbaceous patches, while other common species include *Acacia pravissima*, *Jacksonia scoparia* and the endemic *Keraudrenia lanceolata* (Malvaceae).

Queenslandian *Dichanthium* (bluegrass) Grassland

These grasslands can be dominated by several species of *Dichanthium* and are usually found in tropical or sub-tropical zones. In Queensland the main species are *D. sericeum* and *D. tenuiculum*. Grasslands dominated by *D. sericeum* occur mainly in southeastern Queensland extending from Darling Downs inland to about the 500 mm isohyet. They differ from more northerly grasslands in the presence of winter growing species such as *Stipa aristiglumis* and many annual forbs. Other grasses may include *Aristida latifolia*,

Bothriochloa erianthioides, *Heteropogon contortus* and in the dryer areas species of the Australian generic endemic *Astrebla* such as *A. lappacea* (Poaceae). There are also a number of rare Queensland endemics such as the grass *Dichanthium queenslandicum* (Poaceae) and the composites *Picris evae*, *Stemmacantha australis* and *Trioncinia retroflexa* (Asteraceae). *Dichanthium tenuiculum* grasslands occur in wetter areas in the north from the Carpentaria Plains eastwards. They often include a second tier of smaller grasses such as *Bothriochloa ewartiana*, *Brachyachne convergens* and *Panicum decomposition*. A third layer may also be present containing small forbs like *Alysicarpus indica*, *Crotalaria crassipes* and *Rhynchosia minima*.

Further information required.

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