

Brigalow Belt Mackay Regional Botanic Gardens

Self-guided walk

The Brigalow Belt Bioregion encompasses much of Queensland's lower rainfall country.

It takes its name from forests and woodlands of Brigalow - *Acacia harpophylla*, that grow on clay soils and originally characterised large areas of this bioregion. Much of it has now been cleared for agricultural and pastoral production.

Landscapes within the Brigalow Belt range from undulating plains to rugged ranges.

Life in a harsh and dry climate

The Brigalow Belt contains a variety of plant communities – from grassland to vine thickets to tall open forests - that support many different kinds of plants.

Some are common and grow well beyond the Brigalow Belt; some are rare, while others grow nowhere else on earth.

Adaption and survival strategies

In addition to low rainfall, plants of the Brigalow Belt cope with other extremes of nature - hot summer days, cold to frosty winter nights, floods, fires and droughts.

Adaptations and strategies that help them and their species to survive include:

- deep root systems that search out and make the most of available moisture
- dying back to underground storage systems such as tubers and bulbs that lie dormant until the next favourable growing season
- dormant leaf buds, protected by thick bark or within woody tubers (lignotubers), that enable plants to re-generate after fire or other damage
- spreading vegetatively by means of suckers or layering, therefore not relying on seed germination
- leaves with a thick skin (epidermis) and pores (stomata) that transpire very little moisture
- hairy, light coloured, pendulous or small leaves that reflect more or absorb less heat
- seasonally shedding all or most of their leaves (being deciduous or semi-deciduous), to conserve moisture and energy
- producing large quantities of longlived seeds that remain viable in the soil seed-bank until favourable conditions trigger germination.



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There are examples of many of these adaptations and strategies here in the Brigalow Belt Garden. See how many you can identify.

The Brigalow Belt Garden has been developed to showcase and trial plants from neighbouring areas of the Brigalow Belt in a 'natural' setting. Some species in this garden do extend into the Central Queensland Coast Bioregion, and some have been used as ornamentals for many years. However, the potential of others and their adaptability to wetter conditions, and/or

different soil types is yet to be determined. This is an important role of the Mackay Regional Botanic Gardens.

This manmade seasonal 'creek', is the focal centre of the Brigalow Belt Garden. It was created from a deep straight-sided, featureless drain. It not only looks like many of the ephemeral water courses of the Brigalow Belt but also functions in a similar manner, carrying storm-water and wet-season run-off from the surrounding catchment.

An overview of the Brigalow Belt Garden can be seen by taking a walk around the outer edge of the garden. Wildlife shares the area. Your safety is our concern, but your responsibility.

Enjoy your walk!



Brachychiton acerifolius



Your guide to Mackay Regional Council's Botanic Gardens Brigalow Belt

Brigalow Belt - Some plants along the trail



1. Pretty Wattle - *Acacia decora*, with its bluish-grey foliage it is an attractive shrub at any time of the year but it really 'shines' in winter when it is covered in bright golden balls of perfumed flowers.



2. Sally Wattle, Cooba or Willow Wattle - *Acacia salicina*, is a widespread tree that often grows near seasonal watercourses. Long drooping branches and pendulous pale bluish-green foliage make it an attractive drought resistant shade tree. It has pale lemon ball flowers but be on the lookout for newly opened woody seedpods. Shiny black hard seeds are attached by bright red threads. Most wattles have hardcoated seeds that remain viable for many years. Sally Wattle suckers profusely if its roots are disturbed.



3. Paperbarks and Teatrees - *Melaleuca* spp, often delineate creek banks and drainage lines in the Brigalow Belt. You can see a number of species along the 'creek'. Leaves of different species may look quite different but they all contain essential oil. At certain times you may be able to smell their distinctive aroma. Note the bark on these and other trees along the trail. Many trees that grow in fire-prone communities have thick bark that protects and insulates their trunks. Paperbarks have many layers of papery bark and only the outer layers are burnt in a fire.

3. Black Teatree - *Melaleuca bracteata*, that has tiny dark green hairy leaves and small fluffy white flowers. Its common name refers to its hard dark bark.

3. Pendulous Paperbark - *Melaleuca fluviatilis*, will eventually become a large stately tree with pendulous foliage, similar to the better-known Weeping Paperbark - *Melaleuca leucadendra*. It can be distinguished by its hairy new growth and usually narrower leaves - 5-19mm wide. (All leaves of Weeping Paperbark are hairless (glabrous) and 10-20mm wide.)

3. Snow in Summer or Flax-leaf Paperbark - *Melaleuca linariifolia*, is another smallleaved tree that has been grown as an ornamental for many years. Its masses of fluffy white flowers give rise to one of its common names.



4. Mat Rushes - *Lomandra* spp, have dark green strappy leaves and robust root systems. They are often mistaken for grasses. They have many horticultural applications but are used here to help control water erosion as they do along natural waterways.



5. Small-leaved Ebony - *Diospyros humilis*, is a small, slowgrowing tree. Bark is smooth and dark grey initially, becoming rough and almost black. Note how the small shiny leaves are markedly convex. Small male and female flowers are borne on separate plants but these plants haven't flowered yet. When fully ripe, the small orange-red berries of this species are edible and sweet.

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6. Scaly Bark Ironwood - *Backhousia kingii*, is another small to medium tree of vine thickets and dry rainforest. Have a look at the bark on these trees - on older plants it peels in strips. Mauve coloured new growth is particularly attractive and, like its relatives, the leaves are distinctly aromatic when crushed. Plants here have not flowered and apparently this species doesn't flowers regularly. However, it often spreads by layering or from root suckers rather than from seeds.



7. Orange Thorn or Wallaby Apple - *Pittosporum spinescens*, was previously called *Citriobatus spinescens*. This shrub to small tree often grows in vine thickets. Watch out! It has very sharp prickles and small leaves – like many other plants of the Brigalow Belt. Perhaps not for general horticultural use, except as in barrier planting, but it does provide good cover for small birds.



8. Burdekin Plum - *Pleiogynium timorense*, eventually becomes a large tree with a rough-barked and sometimes buttressed trunk. It is very drought resistant. There are separate male and female trees and this one is a female that's already produced edible, purplish 'plums'. Perhaps you'll see some of the distinctive hard bony structures (endocarps), protecting the seeds, on the ground. Germination is often sporadic over several years with the little seedlings emerging roots first, from the 'portholes'.



9. Native Holly - *Alchornea ilicifolia*, is a prickly-leaved shrub that usually grows on upper banks of seasonal creeks. Note how thick and tough its mature leaves are.



10. Black Ironbox - *Eucalyptus raveretiana*, is a large tree that only occurs along rivers, creeks and adjacent flats in eastern central, Queensland, primarily in the Brigalow Belt so it has a Threatened Status of Vulnerable. Its common name refers to its extremely hard timber and the dark scaly 'box' bark on the trunks of mature trees. Upper branches have smooth, silvery-white 'gum' bark. Look out for any of the tiny seed capsules that follow showy sprays of fluffy white flowers. They are probably the smallest fruit of all *Eucalypts*. Just imagine how tiny the seeds are!



11. River Oak - *Casuarina cunninghamiana*, is a characteristic tree of many creeks where it towers over its neighbours. Its large root system helps to hold stream banks. If there's a breeze blowing, stop a moment and listen to it whispering through what appears to be leafless foliage. Have a closer look. You'll need good eyesight to

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see the 'leaves'! They are reduced to tiny teeth along the needle-like branchlets that do the work of leaves.



12. Northern Swamp Box - *Lophostemon grandiflorus*, is a large tree that grows along seasonal creeks and water courses. It is closely related to the Swamp Mahogany or Messmate - *Lophostemon suaveolens*, that is common in this bioregion and can also be seen in this garden. Although both species look similar, mature trees can be easily distinguished by their bark. Northernleaves. Swamp Box has rough dark scaly bark whereas Swamp Mahogany has softer flaky-fibrous brown to grey bark.



13. Glue Berry Tree - *Cordia dichotoma*, is a deciduous or semideciduous tree that is often found along creek banks. Leaf shape varies from one tree to another but they all turn black

when they fall. In summer, masses of pale pink fruits that follow tiny flowers are a feature of these trees. But watch your step – fruit live up to their name!



14. Tree Omphalea - *Omphalea celata*, is something of a curiosity. All other *Omphalea*, including two other Australian species, are large woody vines (lianes). Tree *Omphalea* is only known from three small isolated populations in central Queensland and nowhere else in the world, so it also has a threatened status of vulnerable. It has soft drooping foliage, large fruit and marble-sized seeds that germinate readily. Even seedlings start off with a thick carrotlike root that continues to enlarge –probably a survival adaptation.



15. Broad-leaved Whitewood- *Atalaya multiflora*, is a tree of dry rainforest and vine thickets. Juvenile and coppice leaflets are long and narrow but its common

name refers to the broad shape of the mature leaflets that are thick and leathery. Showy sprays of small white flowers are followed by one-seeded fruit with an expanded long papery wing, clustered in twos or threes.

We've looked at just some of the species in this garden - but take a look at the others and notice many of the same adaptations to the dry and harsh climate of the Brigalow Belt.

Then, compare the Brigalow Belt Garden to the adjacent rainforest themed gardens representing the wetter and lush plant communities of Reliance Creek, Koumala Range and the Pioneer Peaks of the Central Queensland Coast Bioregion that surround Mackay. What can you see that is different about these plants leaves, form, fruits and flowers?

References:

Harden, McDonald and Williams (2006) Rainforest Trees and Shrubs. Melzer and Plumb (2007) Plants of Capricornia. Census of the Queensland Flora (2010)

Acknowledgments:

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