



16th Australasian **Botanic Guides Conference**

*Beauty rich and rare*  
Kings Park and Botanic Garden Western Australia

**16 - 20 September 2019**

### WALK SUMMARY: A GONDWANA ADVENTURE

This walk covers life on Earth from early Precambrian 3.6+ Billion years ago (Ga) to present time. The walk is located at May Drive Parkland. The walk has three strands:

#### A. History of the Earth

*Ironbark Carvings of dominant plant and animal life in a particular geological era.*

- **Single celled plant life carving** 3.6+Ga. By 4.6Ga crustal pieces had emerged, colliding to form larger continental crustal masses. The oldest 'building block', the Yilgarn craton 3.7–2.8Ga, lies 20km east of Kings Park and forms the western edge of the Australian continent.
- **Possum & Eucalypt carving** 65Ma to present time, when angiosperms, mammals, and plant families e.g. Myrtaceae, Proteaceae, and grasses dominate. Megafauna existed until 1.6Ma.

*Brass World Maps depicting Australia's place in continental drift*

- **Gondwanan Supercontinent - 400Ma** with the Gondwanan distribution of life e.g. **Proteaceae**, **Podocarpus**, Australian Rain Forests. Dinosaurs roamed Gondwana and hence Australia.
- **Fragmentation of Gondwana Supercontinent - 100Ma.** Australia split from Antarctica 45Ma, drifting northward in isolation.
- Isolation contributed to the unique biodiversity particularly in the **Kwongan (SW of WA)**, **Acacias** and **Eucalypts** being examples.

*K/T Chicxulub Crater caused by meteorite impact of 65Ma*

- Meteorite collision ended 75% of life on Earth resulting in the **dinosaur extinction**. Gondwana plants, the **cycads**, specifically macrozamia, **mammals** (which had co-existed with the dinosaurs) and **birds** survived.

#### B. Australian Dinosaurs and Megafauna

- **Muttaborrasaurus** (Miss May and little ones), extinct 100Ma. Very large plant eating, social dinosaur. Probably ate Ginkgo and Cycad foliage.
- **Dinosaur footprints**, discovered near Broome (northern WA). The largest 1.7m diameter discovered in 2017. Earlier dinosaur footprint discoveries in 1950s.
- **Phytosaur** (Phil), extinct 200Ma, a meat eating, dangerous reptile. Not a crocodile ancestor.
- **Bullockornis** (Beaky, Betty & Bill), a megafauna group of flightless birds, 15Ma.
- **Diprotodon** (Dougy & Daisy), the youngest megafauna group, 1.6Ma. Ancestor of the marsupial wombat. Bush-eating. Salt bush found in stomach.

#### C. Plant evolution

- Single celled anaerobic bacteria became strings and mats of **cyanobacteria** forming **stromatolites**. Developed ability to photosynthesise. Important in evolution and ecological change as able to produce glucose and oxygen. First life in waters of the Earth.
- **Cambrian Explosion** 500Ma. Move to the land. **Mosses**, then **ferns**, followed by **Lycopods** and **Calamites** with spore reproduction.
- **Gymnosperms** 360Ma, **Ginkgophyta**, **cycads**, **conifers**, with pollen and seed reproduction.
- Lastly, **Angiosperms**, 144Ma flowering plants with insect, wind, bird and animal pollination
- Living fossils in **Macrozamia fraseri** (280Ma), **Ginkgo biloba** (270Ma), **Wollemi nobilis** (200Ma).