

# *Podocarpus elatus*

## Plum Pine, Brown Pine

When we hear the word *conifer*, we immediately think of trees that produce seeds in cones. A striking exception is *Podocarpus* which produces single seeds attached to branches by swollen, fleshy, plum-like, stalks (receptacles). Hence we use the name *Plum Pine* for *Podocarpus elatus*, a tree of littoral and dry rainforests along the eastern coast and ranges of New South Wales and Queensland.



*Podocarpus elatus* trees are **dioecious**, that is, with male (pollen-producing) cones produced on male trees and single (rarely double) ovules produced on female trees. However, not all *Podocarpus* species are dioecious, some having male and female reproductive structures on the one tree.



We usually also expect that conifers will have either needles (pine trees, cedars, larch) or small scale leaves (cypress, book-leaf pines) but the broad, flattened, oblong leaves with conspicuous mid-vein of *Podocarpus* are quite different.







Worldwide, there are about 105 *Podocarpus* species. The family originated in the southern hemisphere in the Early Triassic, about 240 million years ago, prior to the break-up of Pangaea. The genus evolved in the southern part of Pangaea, and its present-day distribution in Australia, New Zealand, New Caledonia, South America and South Africa reflects its Gondwanan origins. Taxa moved north over the last 15 million years when Sahul, the Australian Plate, collided with Sunda, the South-east Asian Plate. Some species reached New Guinea, spreading along the Malay Archipelago to Japan and the Philippines. Similarly, in the Americas, podocarps migrated north from South America, through Central America to Mexico. These early populations grew

with Araucarians, Ginkgos, cycads, tree ferns, giant club mosses and horsetails, and were probably browsed and dispersed by dinosaurs.

Although Podocarpaceae is intrinsically a family of Gondwanan origins, it's interesting that *conifers* are recognised as a *monophyletic* group, that is, they share a common ancestor;

Podocarps (Podocarpaceae) dominate the Southern Hemisphere but the Pine family (Pinaceae) dominates the Northern Hemisphere. The ability of podocarps to successfully compete with broad-leaved flowering plants is because their large, flat leaves are more suitable for light harvesting than the narrow needles of Pines, allowing them to survive in the rainforests of the tropics. Pines, on the other hand, cannot tolerate the heavy shade typical of tropical

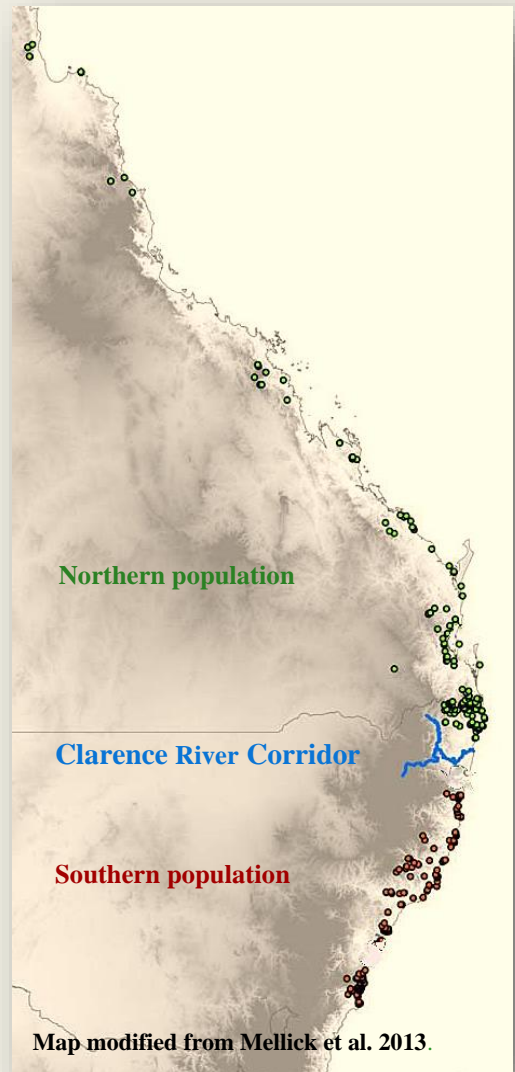


forests, hence their inability to migrate south across the Equator.

Recent molecular studies have identified two genetically distinct groups of *Podocarpus elatus* that are separated by the Clarence River Valley of northern NSW. At the time of the *Last Glacial Maximum* (21,000 years ago), the habitats of these two genetically differentiated groups were separated at a considerable distance. The northern group survived in a small refugial area and expanded in the post-glacial period, but the southern group contracted in range, although represented by a much greater species diversity.

The timber of *P. elatus* has been used for a variety of purposes, including furniture, boats, musical instruments and jetties. It is a popular ornamental tree in Sydney.

Look for *Podocarpus elatus* in the Biology courtyard garden. The ground below the tree is currently strewn with purplish-blue *plums*.



Mellick R. 2012. Quaternary Climate Change and *Podocarpus elatus* (Podocarpaceae). A thesis submitted for the degree of Doctor of Philosophy, School of Earth and Environmental Sciences, University of Adelaide.

Mellick R. Rossetto M. Allen C, Wilson P, Hill R, Lowe A. 2013. Intraspecific Divergence Associated with a Biogeographic Barrier and Climatic Models Show Future Threats and Long-Term Decline of a Rainforest Conifer. *The Open Conservation Biology Journal* 7: 10.2174/1874839201307010001

Wikipedia: <https://en.wikipedia.org/wiki/Podocarpus>

Wikipedia: [https://en.wikipedia.org/wiki/Podocarpus\\_elatus](https://en.wikipedia.org/wiki/Podocarpus_elatus)

Map based on Atlas of Living Australia:

[http://biocache.ala.org.au/occurrences/search?q=lsid:http://id.biodiversity.org.au/node/apni/2915282#tab\\_mapView](http://biocache.ala.org.au/occurrences/search?q=lsid:http://id.biodiversity.org.au/node/apni/2915282#tab_mapView)

Alison Downing, Brian Atwell, Karen Marais, Kevin Downing  
Department of Biological Sciences



**MACQUARIE**  
University  
SYDNEY · AUSTRALIA

