
The Royal Society of Western Australia Centenary event

The Western Australian flora – retrospect and prospect

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Tuesday 29th April

Scitech Lotterywest Theatre

6.30 pm for 7.00 pm. Refreshments provided.

Members and the Public ALL WELCOME.

Registration at secretary@rswa.org.au

Members \$10, non-members \$15

Summary:

In June 2013, the Western Australian flora contained 13,539 currently accepted taxa (species and infraspecific categories), of which 12,307 were native and 1,232 were introduced weeds. This talk considers the evolutionary history and conservation prospects of the State's flora, with a special focus on the globally renowned Southwest Australian Floristic Region (SWAFR). The Kimberley and desert floras remain exciting frontiers, relatively poorly explored compared with the SWAFR, but already known to exhibit much less endemism at State level.

In contrast, the SWAFR is rich in endemic species, and enjoys a Mediterranean climate, its subdued terrain dominated by old, climatically-buffered, infertile landscapes (OCBILs). Aboriginal people developed complex cultural practices and cosmology that ensured plants were regarded as part of their responsibilities for caring for country, family and knowledge.

The SWAFR, one of the world's 25 Global Biodiversity Hotspots where species under threat are concentrated, has some 7000 native vascular species (species/subspecies): one third described since 1970, 49% endemic, and more than 2500 of conservation concern. Like plants of the Greater Cape Floristic Region in South Africa, there are a small number of genera that are exceptionally rich in species and endemics in the SWAFR: *Acacia* (440 species), *Eucalyptus* (294), *Leucopogon* (204), *Stylidium* (200), *Grevillea* (195), *Melaleuca* (174), *Banksia* (156), *Caladenia* (110), *Gastrolobium* (106), and *Hakea* (100). With the exception of the herbaceous triggerplants (*Stylidium*) and spider orchids (*Caladenia*), this list comprises woody trees and shrubs. Origins of components of the flora are complex. Molecular phylogenies suggest multiple dispersal events into, out of, and within the SWAFR throughout the Cretaceous and Cenozoic; in many phylogenetically unrelated clades; and from many directions. Either explosive speciation or steady cladogenesis with reduced extinction rates occurred from the mid-Tertiary in response

to progressive aridity and other selection pressures that characterise OCBILs. Genomic coalescence was sometimes involved. Rainforest taxa went extinct by the Pleistocene. Old lineages nevertheless persist as one endemic order (Dasypogonales) and at least 6 endemic families.