



16th Australasian **Botanic Guides Conference**

Beauty rich and rare
Kings Park and Botanic Garden Western Australia

16 - 20 September 2019

WALK SUMMARY: NATURE'S TOOLBOX

We have coined the phrase 'Nature's Toolbox' to describe the various ways plants have adapted to, and survive in, the Western Australian (WA) environment. These tools include variations in roots, leaves, bark, flowers and seeds, and relationships with fauna.

The WA environment is characterised by very old, low nutrient soils, low or seasonal rainfall and high temperatures. We will see how 'tools' such as leaf and root adaptations that conserve and ensure adequate supply of water and nutrients, are used so that plants flourish despite these limitations. The cluster roots of banksias maximise the uptake of scarce nutrients. The many white or grey-green leaved plants such as *Adenanthos* (Woolly Bush) demonstrate resistance to heat and drought. *Podocarpus drouynianus*, the only podocarp found in Southwest Australia, is a relict from wetter times. It survives because it is well matched to its current Mediterranean climate.

Fire has been a common occurrence in the WA environment over a long period. The ability of plants to tolerate or regenerate following fire has been a major selection pressure. Several 'tools' such as lignotubers, types of bark and strategies for reseeding will be highlighted in banksia and eucalypt species.

Predation also challenges survival. The size, shape, texture and taste of leaves are adaptations that can protect plants from predators. We will see sharp points on leaves of many plants, while the chemicals in the leaves of eucalypt and gastrolobium species make them unpalatable to predators.

Adaptation to environmental limitations is one part of long-term survival. The ways in which plants produce the next generation provides many examples of plant adaptation in the WA environment. Approximately 14% of plants from the Southwest are bird pollinated. The number, size, colour and arrangement of flowers all work to attract avian pollinators.

Despite, indeed because of, the major limitations of the WA environment, plants have adapted so successfully that exceptional floral speciation has developed. This will be highlighted with examples from the *Eucalyptus* genus, in which different species, such as *E. pleurocarpa*, *E. kruseana*, *E. caesia* and *E. formanii*, exhibit very different growth or appearance, depending on the particular limitations in the environment in which they grow.