

# Acacia 2006: Knowing and growing Australian wattles

Daniel J. Murphy

National Herbarium of Victoria, Royal Botanic Gardens Melbourne, Birdwood Avenue, South Yarra, Victoria 3141, Australia; e-mail: daniel.murphy@rbg.vic.gov.au

## Introduction

This volume of *Muelleria* marks the introduction of a new format for the journal and is a special issue, the result of the 'Acacia 2006' conference held in Melbourne from 26 to 28 August 2006. Titled 'Knowing and growing Australian wattles', the conference was jointly hosted by the Royal Botanic Gardens Melbourne and the Australian Plants Society Victoria as part of the biennial F.J.C. Rogers seminar series. These papers provide a valuable snapshot of the large genus *Acacia s.s.*, so important in Australia, and extensively utilised internationally. Most authors in this issue have provided review-style papers, reflecting their different areas of expertise. The review nature of the papers was seen to be necessary to contextualise, for a general audience, some of the work that is being undertaken on *Acacia* and for this reason we have broadened the scope of *Muelleria* beyond systematics, taxonomic revisions, nomenclature matters, and phylogenetic and biogeographical studies, to include these papers. The entire program of talks at the 'Acacia 2006' conference can be found in Murphy (2006) and the horticultural proceedings volume (Australian Plants Society Inc, Maroondah Group 2006).

The diversity of *Acacia s.s.* in Australia is astounding, some of which is illustrated in Figure 1. The genus (in the strict sense) comprises almost 1000 species, and is confined to the Australian continent except for a few species found on islands from Hawaii in the Pacific Ocean to Madagascar in the Indian Ocean. The range of topics covered in this volume reflects this diversity as well as the variety of research interests in the genus.

But first, due to recent name changes to *Acacia s.l.*, it is necessary to make a note about the names used in this volume. Most contributors have decided to use the names of the segregate genera that follows from the retypification of *Acacia* with an Australian type (as outlined by Maslin in this volume): *Acacia s.s.* (formerly *Acacia* subgenus *Phyllodineae*, synonym *Racosperma*), *Vachellia* (formerly *Acacia* subgenus *Acacia*), *Senegalia*, *Acaciella* and *Mariosousa*. For further information concerning the generic status of *Acacia s.l.*, and to keep abreast of future name changes concerning members of this group, the reader is referred to the "species

*Muelleria* 26(1): 3-6 (2008)

*continued page 6*





**Figure 1.** Some morphological diversity of *Acacia* in Australia and their sectional placement using the classification of Pedley (1978). Clockwise from top left. *Acacia adoxa* var. *adoxo*, sect. *Lycopodiifoliae* (DM); *A. colei* var. *colei*, sect. *Juliflorae* (DM); *A. pulchella*, sect. *Pulchellae* (GB); *A. tetragonocarpa*, sect. *Alatae* (GB); *A. ampliceps*, sect. *Phyllodineae* (DM); *A. cuspidifolia* sect. *Phyllodineae* (DM); *A. spathulifolia*, sect. *Phyllodineae* (DM); *A. dictyophleba*, sect. *Phyllodineae* (DM). Photographs by Daniel Murphy (DM) and Gillian Brown (GB).



**Figure 2.** Pod, flower and vegetative characteristics of some members of tribe Ingeae. Clockwise from top left. *Archidendron lucy*; *Calliandra haematocephala*; *Inga edulis*; *Paraserianthes lophantha* subsp. *lophantha* in fruit (right) and flower (left); *Enterolobium cyclocarpum*. Photographs by Gillian Brown.

from page 3

gallery" page of the WorldWideWattle website ([www.worldwidewattle.com](http://www.worldwidewattle.com)). In a very useful contribution, Maslin has provided a clear and concise summary of the current nomenclature for *Acacia s.l.*. This has previously been confusing for many people and this paper is a welcome contribution.

In the midst of the nomenclatural debate concerning the application of the name *Acacia*, it is important to remember the scientific reasons for the fragmentation of *Acacia s.l.* Murphy (pp. 10-26) reviews the historical classification of *Acacia*, illustrating the numerous studies that have shown *Acacia s.l.* is not monophyletic. Murphy then focuses on the phylogenetic studies of *Acacia s.s.* which will eventually overturn the current classification of *Acacia s.s.* and greatly enhance the evolutionary understanding of this amazingly diverse monophyletic lineage. Molyneux and Forrester (pp. 51-56) continue the systematics and taxonomy theme by describing three new and very rare species of *Acacia* from East Gippsland in Victoria.

Brown (pp. 27-42) provides a comprehensive review of the taxonomy and phylogeny of the mimosoid legume tribe Ingeae which is relatively poorly known. This morphologically diverse group is well illustrated in Figure 2. The tribe Ingeae is now known to include the closest relatives of *Acacia s.s.* and is therefore of critical importance in understanding the evolution and biogeography of the Australian *Acacia* flora. One such evolutionary insight that can be assessed in the light of its phylogeny is the classical morphological interpretation of the *Acacia* phyllode in comparison to bipinnate compound leaves, which is reviewed by Gardner *et al.* (pp. 43-50). They reassess the developmental homology of the phyllode and discuss this in the context of recent understandings in developmental genetics.

The traits of *Acacia* species that make them so successful in the Australian landscape may also predispose some species to weediness and two papers

discuss some of the issues this raises in the Australian context. Adair (pp. 67-78) looks at some Australian species that have become naturalised outside their original ranges within Australia and the potential for biological control. Reid and Murphy (pp. 57-66) discuss methods for assessing whether species are naturalised or indigenous to an area using herbarium records and other evidence, and examine three *Acacia* species found on the coast in western Victoria as case studies.

The paper by Rinaudo and Cunningham (pp. 79-85) reviews the use of several Australian *Acacia* species in Africa as multi-purpose agro-forestry trees and the issues surrounding their adoption by African farmers. The importance of their work, which has the potential to assist millions of people in Africa, cannot be overstated. Along a related line of research Singhal *et al.* have undertaken a comprehensive study of the highly variable species *Acacia* ('*Vachellia*') *nilotica*. This species is put to many uses in India, and Singhal *et al.* (pp. 86-94) examine three varieties of *A. nilotica* to evaluate their useful traits and identify which variety is the one most suited to particular industry.

## Acknowledgments

I wish to thank Rob Cross and Gillian Brown, my co-organisers of the "Acacia 2006" conference Scientific Program, and the Australian Plants Society Victoria Maroondah Group for the initial idea for the *Acacia* conference and for organising the Horticultural Program and associated field trips.

## References

- Australian Plants Society Inc, Maroondah Group (2006). *Proceedings, Acacia 2006: Knowing and Growing Australian Wattles*. National Herbarium of Victoria and Australian Plants Society (SGAP Victoria) Inc: Melbourne.
- Murphy, D.J. (2006) 'Meeting report Acacia 2006 Conference – The Science Behind Acacia: Current research and recent discoveries', *Australian Systematic Botany Society Newsletter* 128, 36-37.