

The Southwest Australian Floristic Region as a biodiversity hotspot, with special reference to its trees

Stephen D. Hopper

Winthrop Professor of Biodiversity
Centre of Excellence in Natural Resource Management, and Plant Biology, The University of Western Australia

Keynote Lecture at the **Tree Forum**
Australian Garden History Society with the Faculty of
Architecture, Landscape and Visual Arts, UWA

University Club, UWA
Friday 10 May 2013 from 8.30am until 5pm



THE UNIVERSITY OF
WESTERN AUSTRALIA
Achieve International Excellence

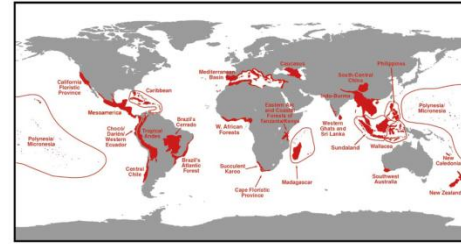
A CENTURY OF
ACHIEVEMENT
1913 - 2013



Outline

- Global Biodiversity Hotspots
- The Southwest Australian Floristic Region
- Some special trees of cultural/horticultural significance from:
 - High Rainfall Botanical Province
 - Southeast Coastal Botanical Province
 - Transitional Rainfall Botanical Province

Hotspots - Myers *et al.* (2000) rationale



- Conservationists are far from able to assist all species under threat, if only for lack of funding
- How can we support the most species at the least cost?
- One way is to identify 'biodiversity hotspots'
- Places where exceptional concentrations of endemic species are undergoing exceptional loss of habitat



Myers N, Mittermeier RA, Mittermeier CG, da Fonseca GAB, Kent J. (2000). Biodiversity hot spots for conservation priorities. *Nature* 403:803–808.

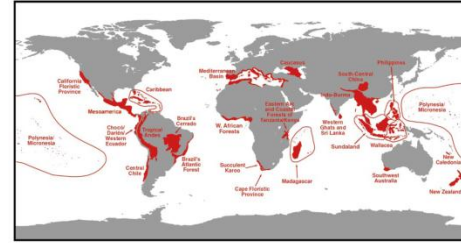


44% of all species of vascular plants and 35% of all species in four vertebrate groups are confined to 25 hotspots comprising only 1.4% of the land surface of the Earth



Myers N, Mittermeier RA, Mittermeier CG, da Fonseca GAB, Kent J. (2000). Biodiversity hot spots for conservation priorities. *Nature* 403:803–808.

Defining a global biodiversity hotspot



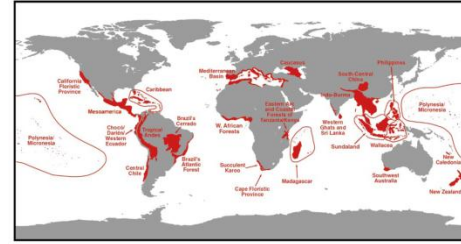
- contains at least 1,500 species of vascular plants ($> 0.5\%$ of the world's total) as endemics
- has lost at least 70% of its original habitat



Myers N, Mittermeier RA, Mittermeier CG, da Fonseca GAB, Kent J. (2000). Biodiversity hot spots for conservation priorities. *Nature* 403:803–808.

25 global biodiversity hotspots



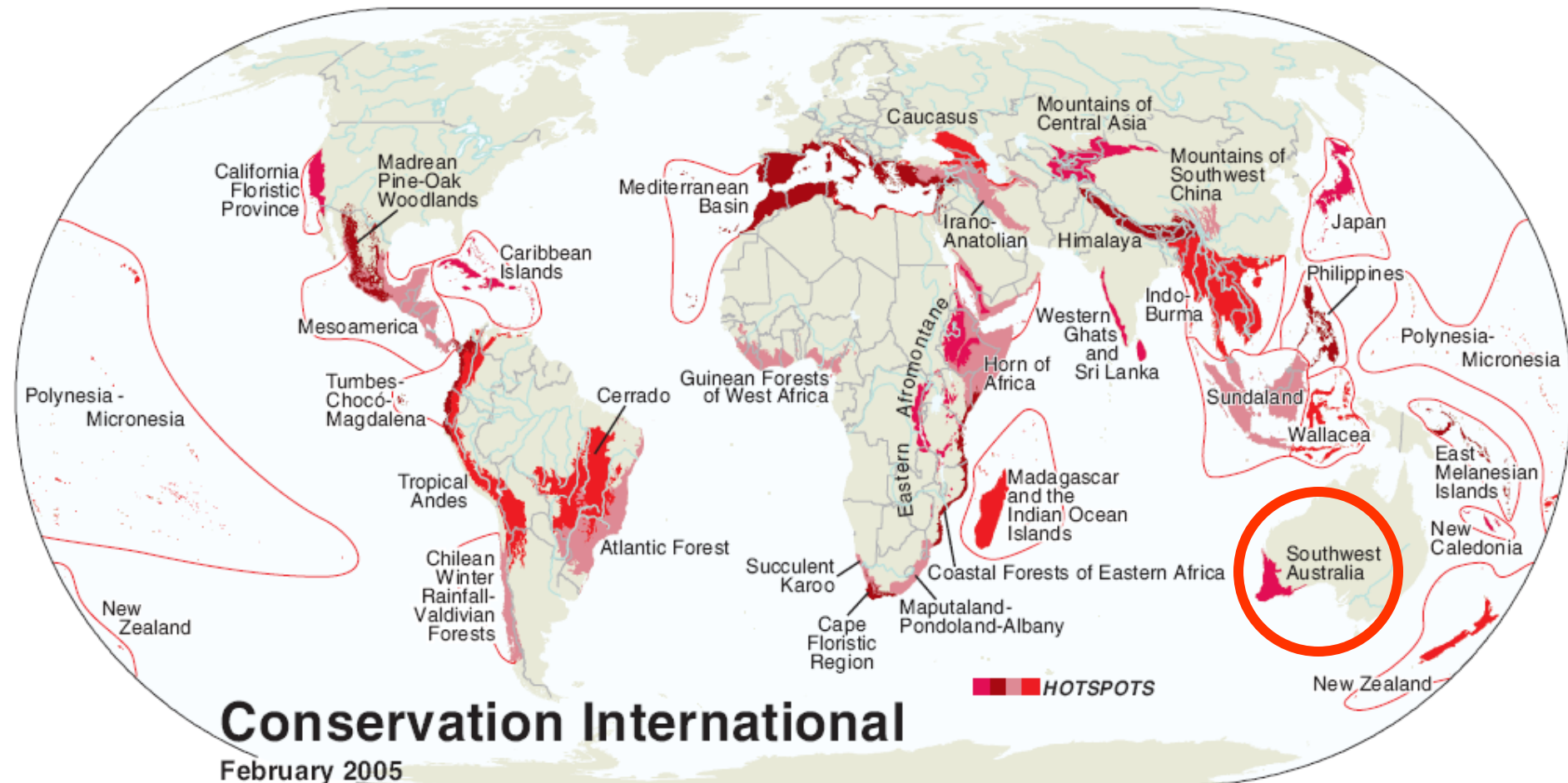


Unless we succeed in conserving this small fraction of the planet's land area (2.3%), we will lose more than half of our natural heritage.

Conservation International 2005

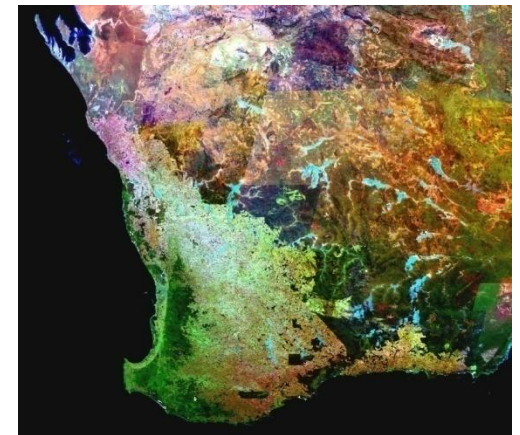
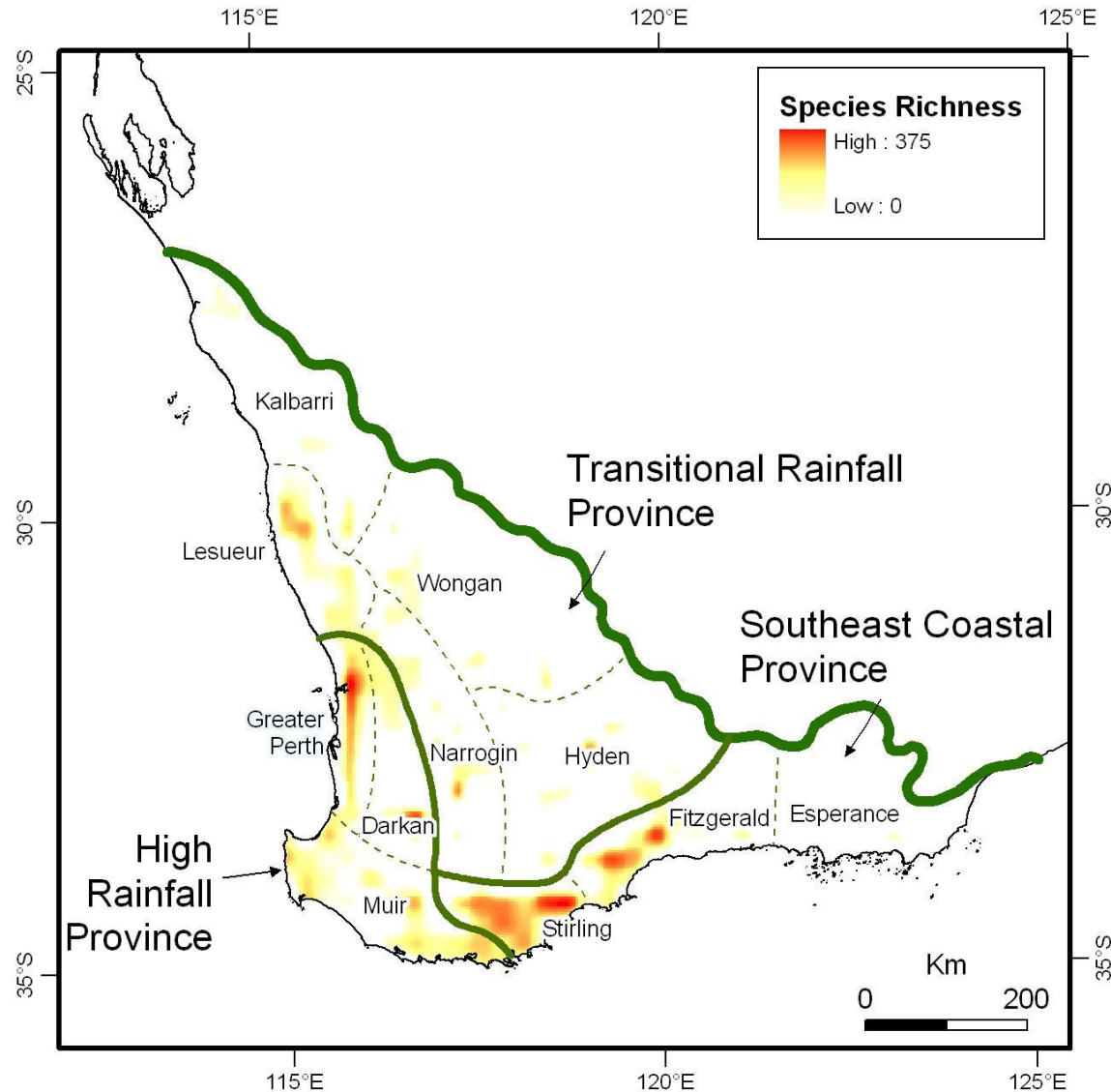


Revised to 34 Global Biodiversity Hotspots in 2005 (unrefereed)



Occupy 15.7% of global area, but only 2.3% remains intact.
150 000 endemic plant species; 12 000 endemic terrestrial vertebrates

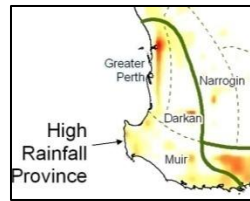
The Southwest Australian Floristic Region



Hopper & Gioia (2004)
Annu. Rev. Ecol. Evol. Syst. 35:623-650

Special Trees

– High Rainfall Botanical Province

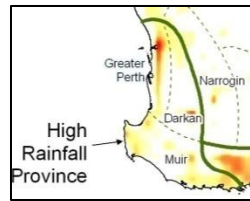


Karri



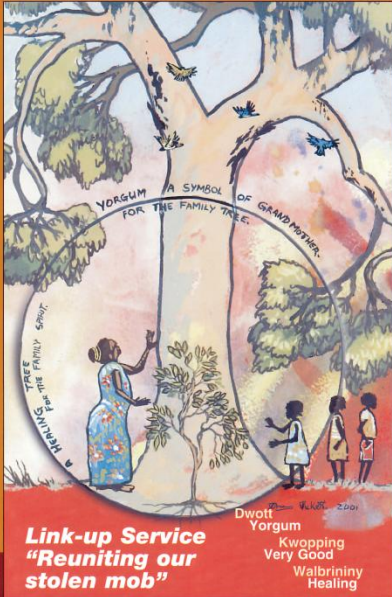
Marianne North

Tingle



YORGUM

A Healing Tree for the Family Spirit

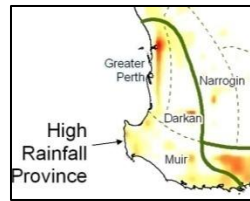


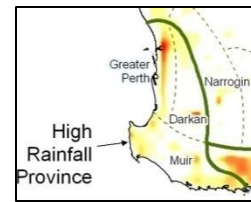
Yorgum Aboriginal Corporation
Building Solid Families
and Link-up Program
(08) 9218 9477

Monday-Friday 9.00am-5.00pm
Phone 9218 9477 Fax 9225 5001

Yorgum

(Red-flowering Gum,
Corymbia ficifolia)





Eucalyptus virginea named in 2004

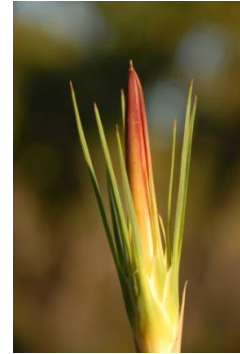


Rob Kessler

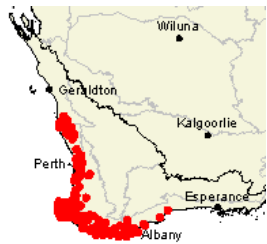
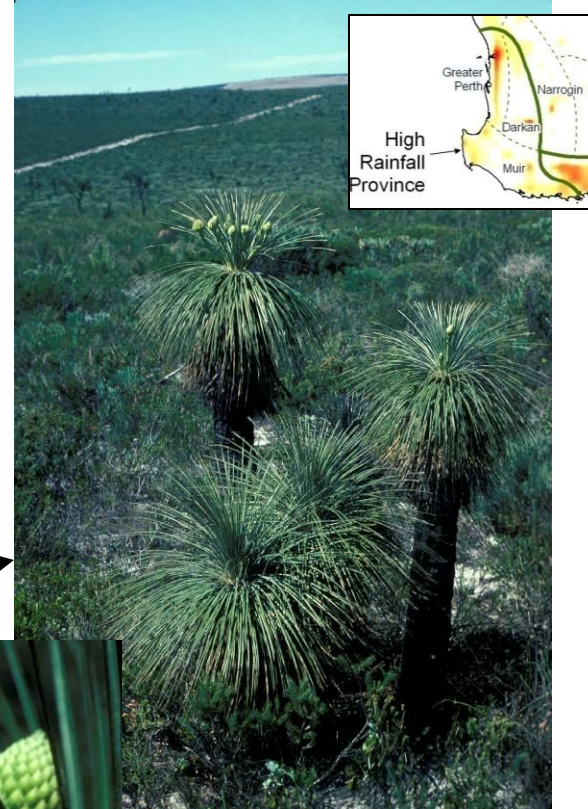
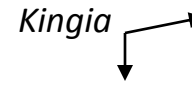
The Southwest Australian Floristic Region

Old endemic plants

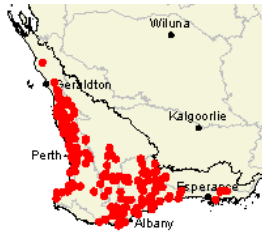
The Order DASYPOGONALES



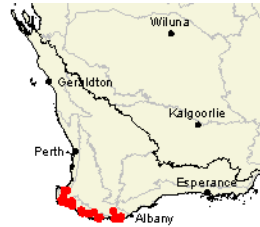
Baxteria



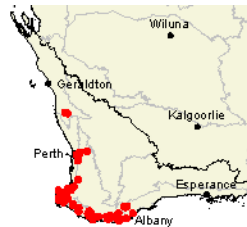
Dasypogon



Calectasia



Baxteria



Kingia

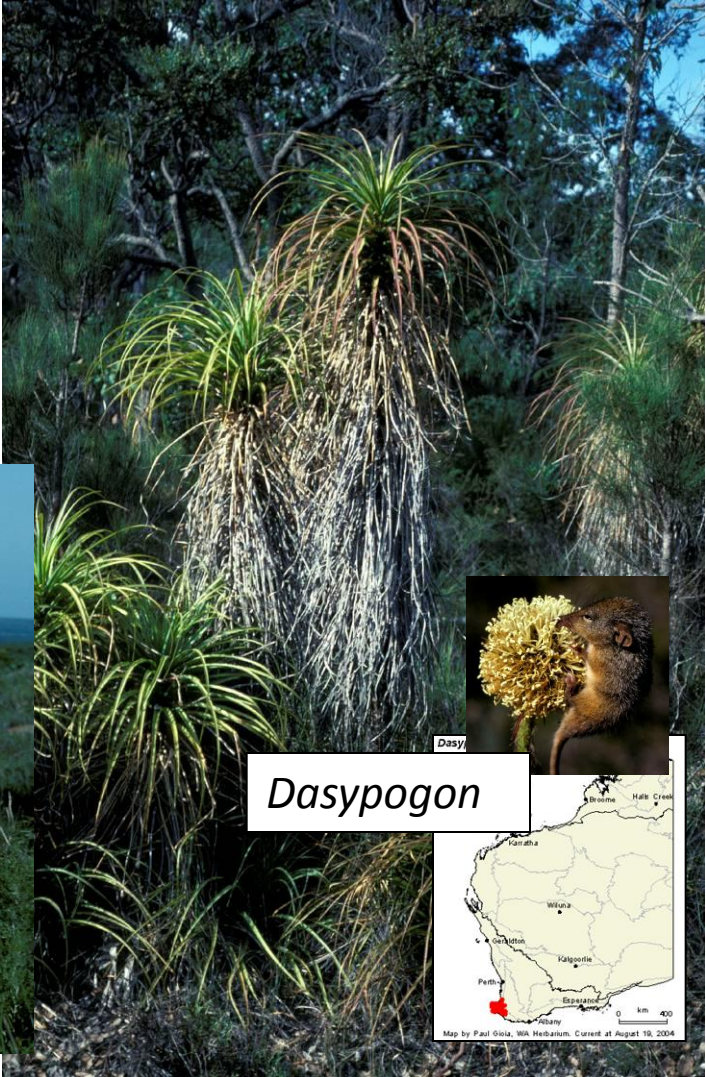
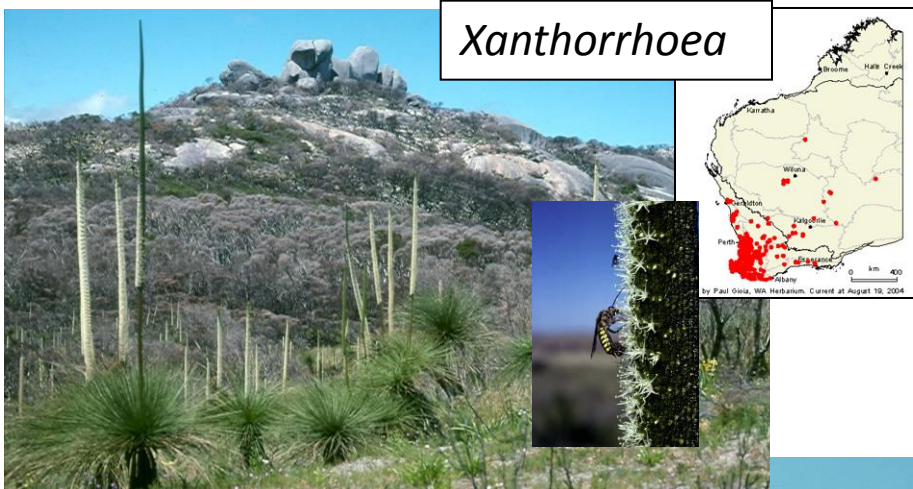
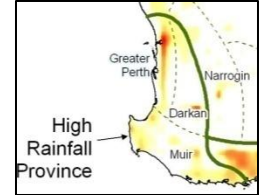


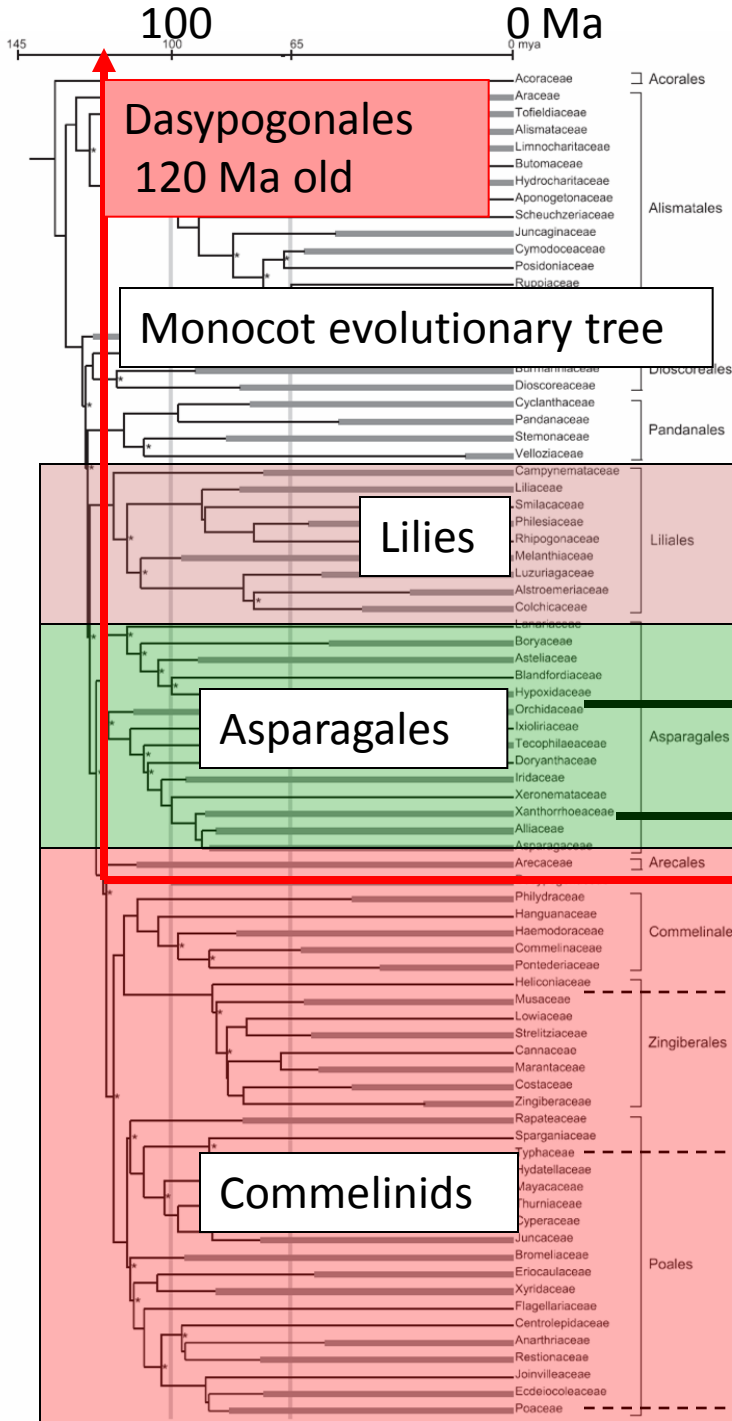
Dasypogon



Calectasia

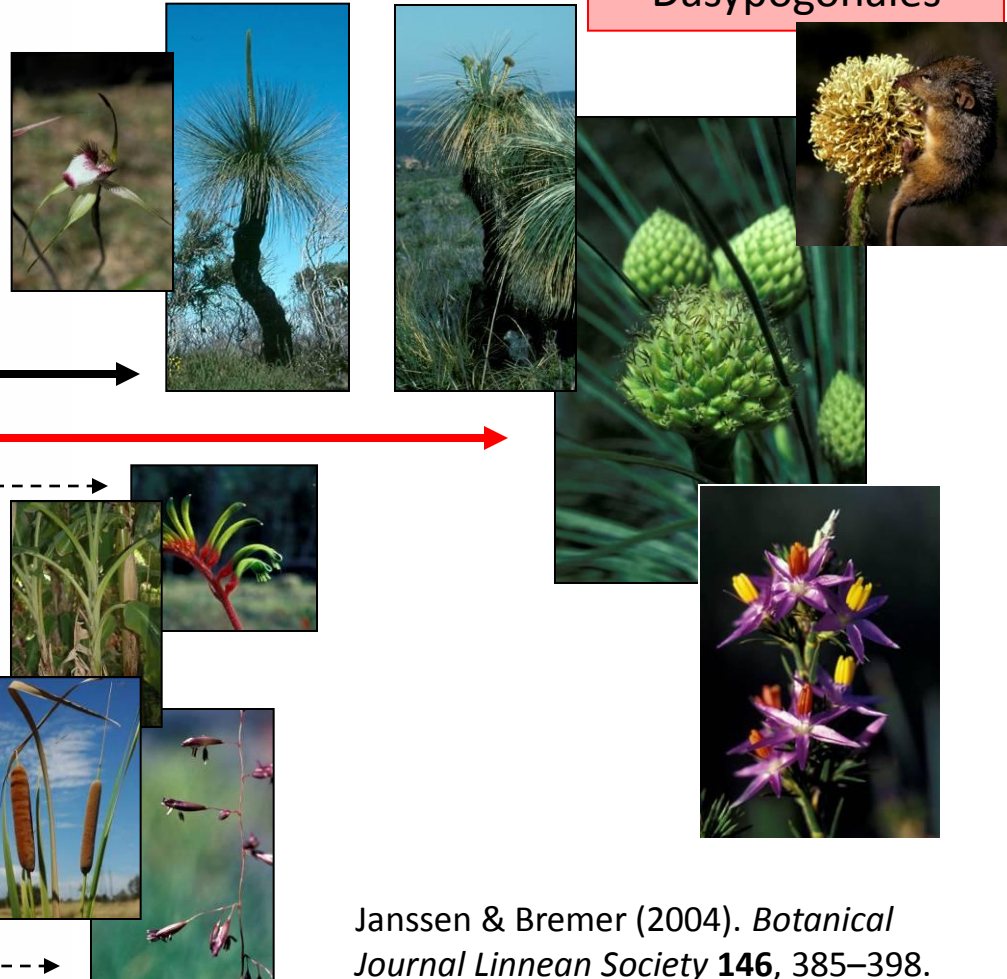
DNA – resolving grass tree relationships (lilies or something else?)



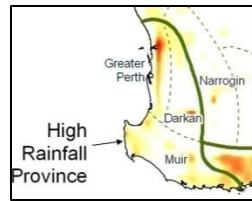


Estimating age – DNA & fossil data

?mystery plants?
Dasypogonales



Janssen & Bremer (2004). *Botanical Journal Linnean Society* **146**, 385–398.

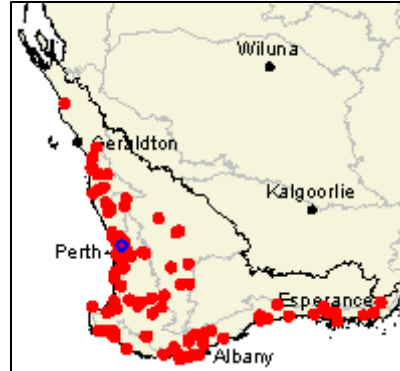
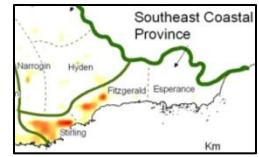


Rare hybrids – *Eucalyptus x graniticola* ms

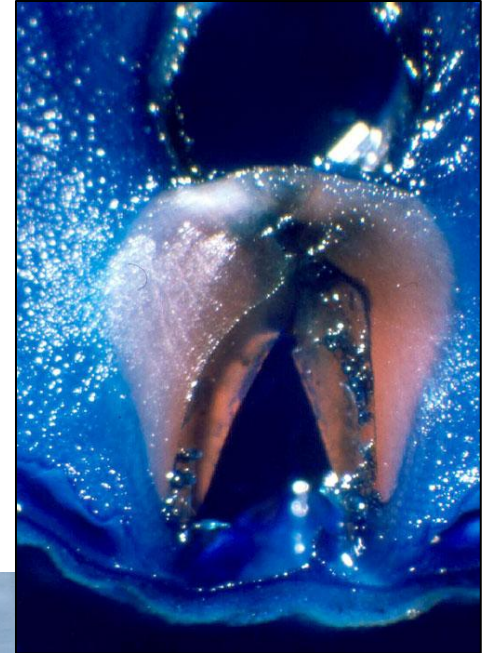


Special Trees

Southeast Coastal Botanical Province

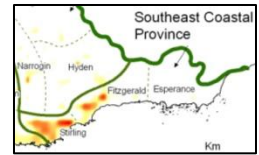


Nuytsia





Banksia speciosa



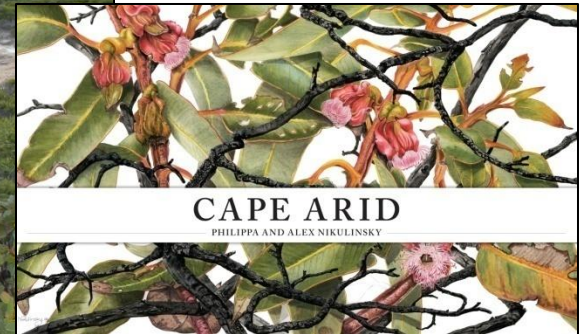
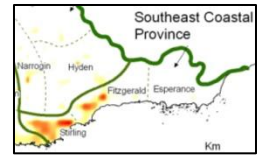
P Nikulinsky



Eucalyptus stoatei

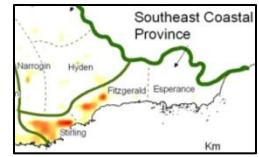


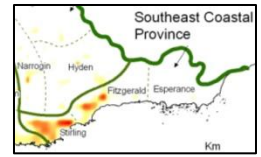
Eucalyptus sweetmaniana discovered in 2006 named in 2009



Eucalyptus utilis

(confused with *E. platypus* x *heterophylla*)

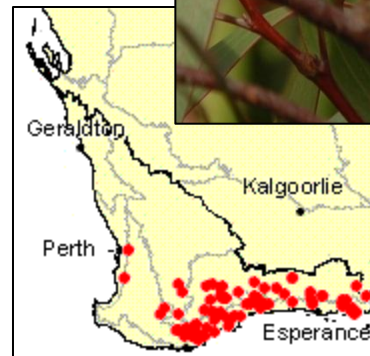
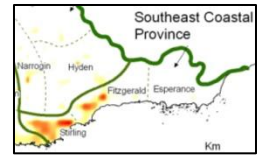




Hakea victoria

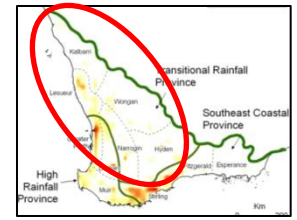


Hakea laurina



Special Trees

Transitional Rainfall Botanical Province

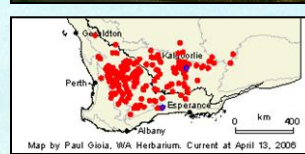


Ilyarrie (*Eucalyptus erythrocorys*)



Discriminating *Eucalyptus salicola* from *E. salmonophloia*

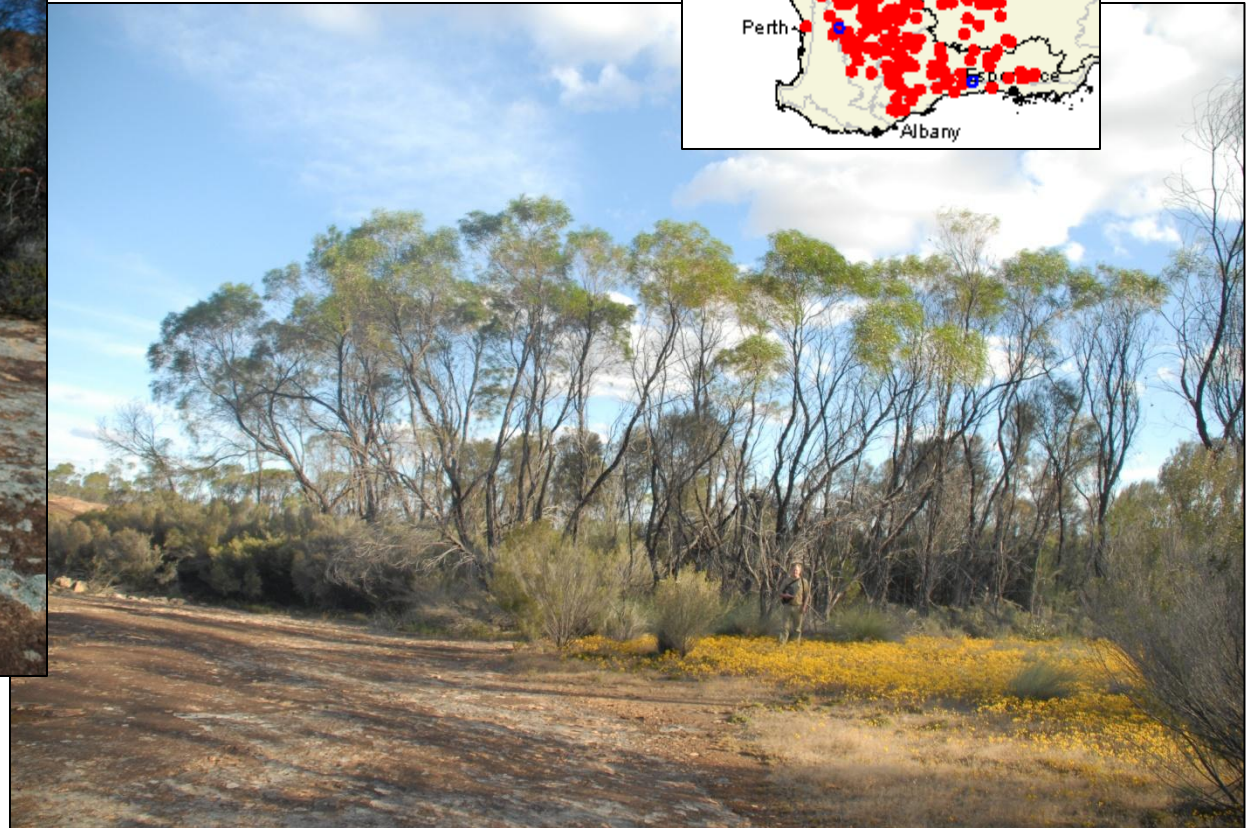
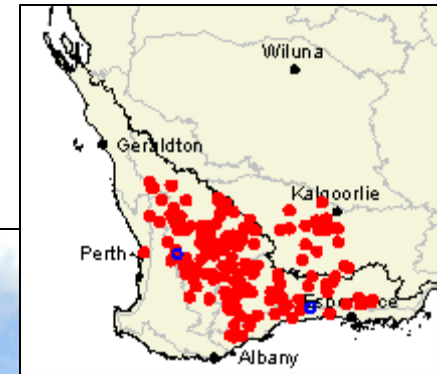
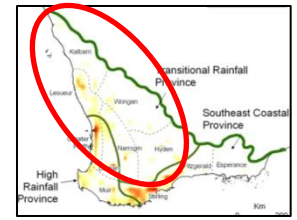
Brooker (1988) *Nuytsia* 6, 329-330



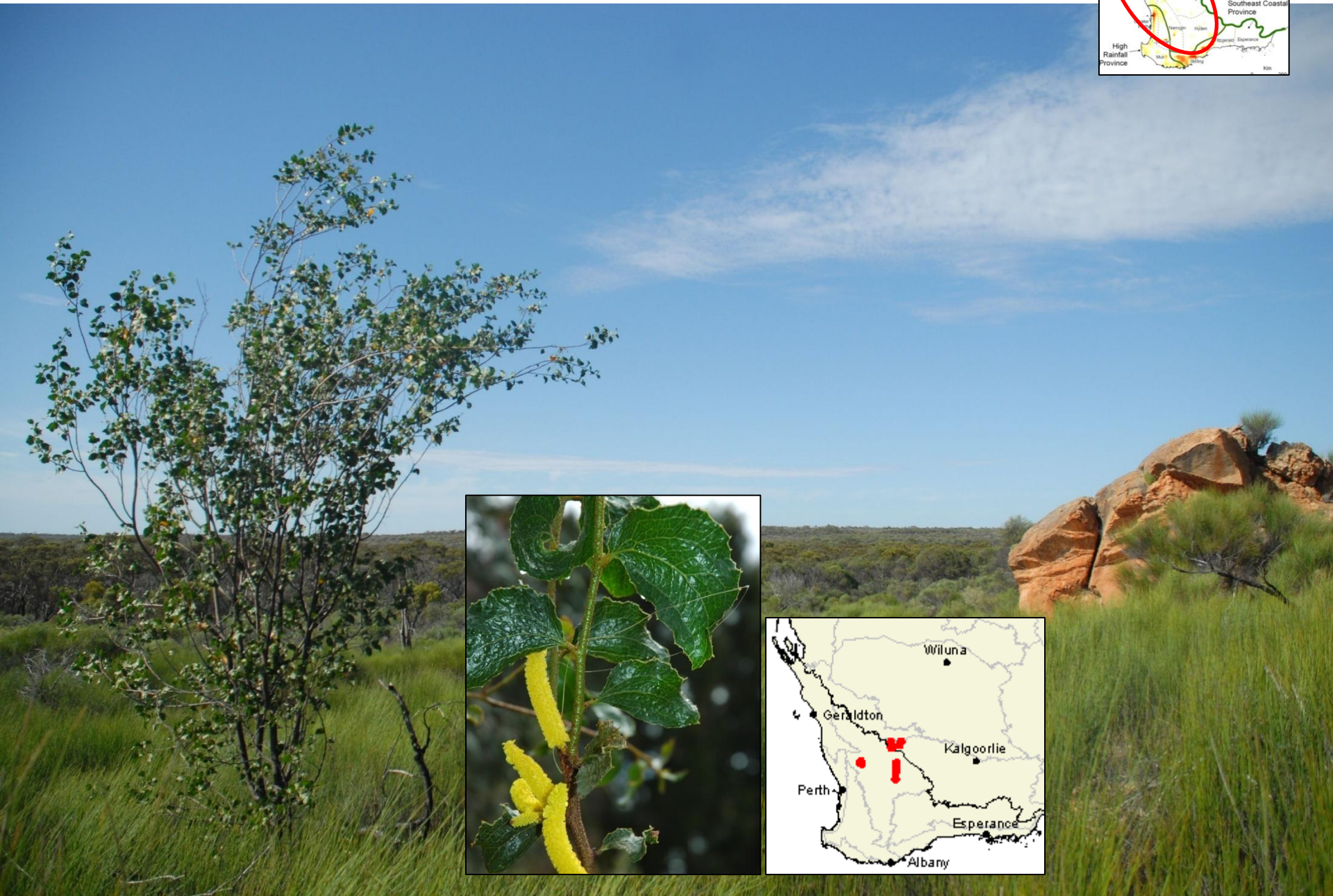
caesia
princess of eucalypts



Acacia lasiocalyx



Acacia denticulosa



Balga/palaq/mimidi/borera (*Xanthorrhoea* grass trees)





Which tree? What place? Caring for biodiversity?

