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Supplementary Material

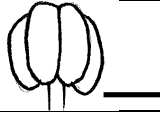







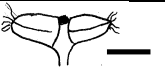


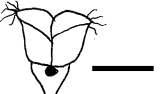

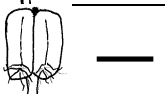

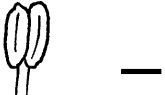

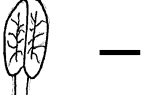

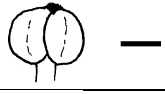



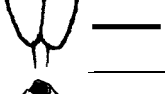

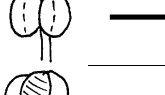





Myrtaceae anther glands: morphology, anatomy and variation in glandular contents
















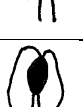

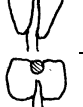




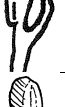
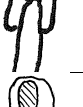











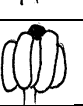
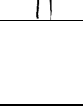






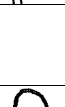







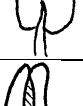
P. G. Ladd^{A,*}

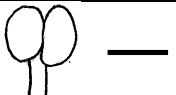

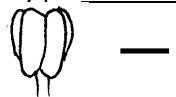


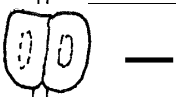
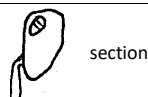
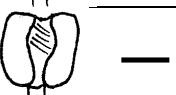

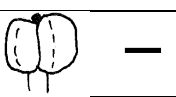

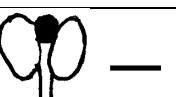


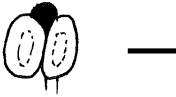

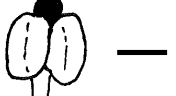
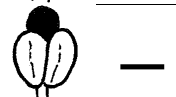

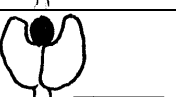

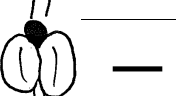







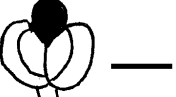
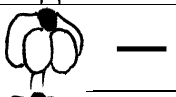

^AEnvironmental and Conservation Science, Murdoch University, Murdoch, 6150, WA, Australia.

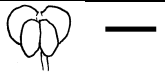
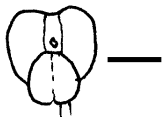


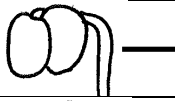

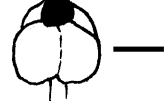


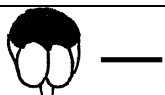


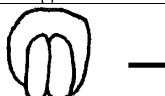


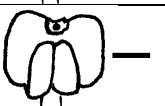

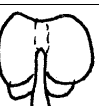
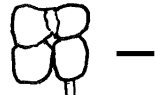

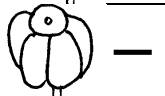




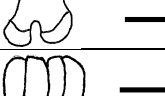

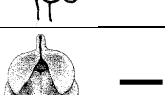
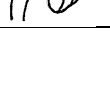

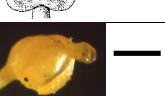

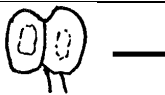










*Correspondence to: P. G. Ladd Environmental and Conservation Science, Murdoch University, Murdoch, 6150, WA, Australia Email: P.Ladd@murdoch.edu.au



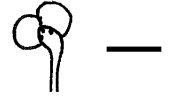

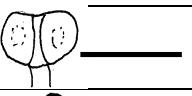



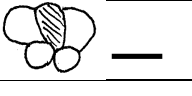

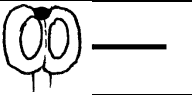








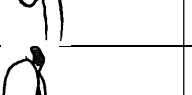

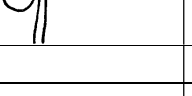

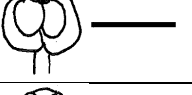




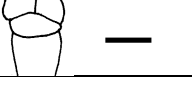






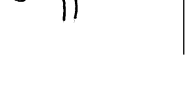
Table S1 Outline sketches of Myrtaceae anthers, the order of tribes and subtribes follows Thornhill et al (2015) and Rye et al. (2020). Detailed illustrations of *Verticordia* anthers are contained in George (1991) and Ladd et al. (1999). All Cult, herbarium and field (F) collected species were examined by the author in the present study.


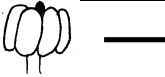

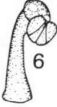






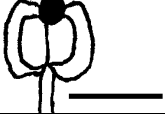



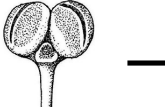
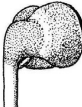

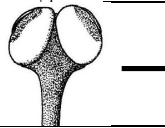



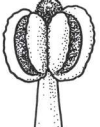




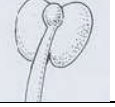





Tribes, subtribes	Adaxial view	Side view	Abaxial view	Reference or source
Psiloxylodideae <i>Heteropyxis natalensis</i>				Cult (Kb)
Myrtoideae				
Xanthostemoneae				
<i>Xanthostemon aurantiacus</i>				F (no gland)
Lophostemoneae				
<i>Lophostemon confertum</i>				Cult.
Melaleuceae				
<i>Beaufortia anisandra</i>				F
<i>B. burbridgeae</i>				F
<i>B. squarrosa</i>				F
<i>Callistemon citrinus</i>				Cult.
<i>Calothamnus brevifolius</i>				F
<i>C. quadrifidus</i>				F (no gland)
<i>C. sanguineus</i>				F
<i>Conothamnus trinervis</i>				F
<i>Eremaea asterocarpa</i>				F
<i>Melaleuca cuticularis</i>				F
<i>M. leptoclada</i>				F
<i>M. scabra</i>				F

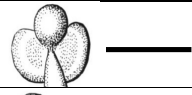

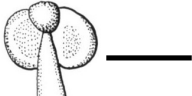
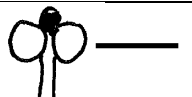

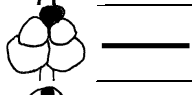


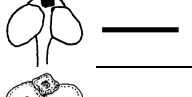



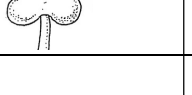







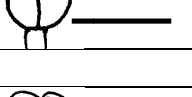
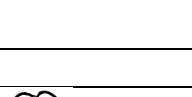
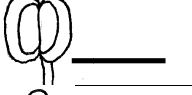

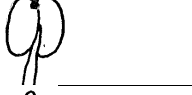
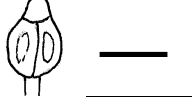
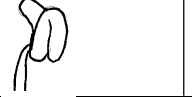

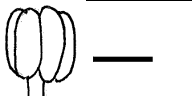


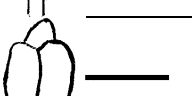
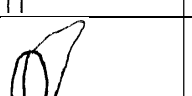
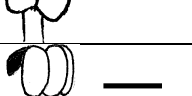
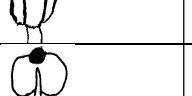
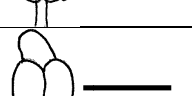
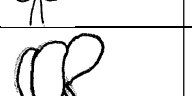
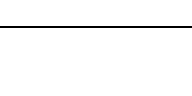


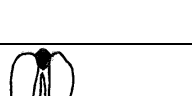
<i>R. velutina</i>		—			F
Eucalypteae					
<i>Angophora costata</i>		—			Cult
<i>Corymbia ficifolia</i>		—	 section		Cult.
<i>Eucalyptus accedens</i>		—			F
<i>E. annulata</i>		—			Cult.
<i>E. astringens</i>		—			F
<i>E. celastroides</i>		—			F
<i>E. conferruminata</i>		—	 —	 —	Cult.
<i>E. cornuta</i>		—			Cult.
<i>E. diversicolor</i>		—			F
<i>E. erythrocorys</i>		—			Cult
<i>E. gomphocephala</i>		—	 section		F
<i>E. kingsmillii</i>		—			F
<i>E. kruseana</i>		—			F
<i>E. leucoxydon</i>		—			Cult.
<i>E. macrocarpa</i>		—			Cult
<i>E. marginata</i>		—			F
<i>E. obliqua</i>		—			F
<i>E. pachyphylla</i>		—			Cult
<i>Eucalyptus platypus</i>		—			F



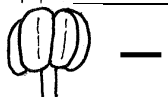
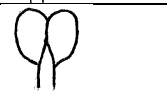
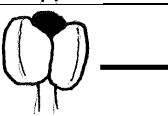
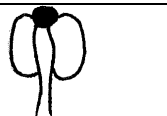
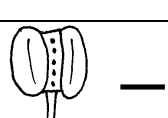
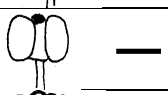
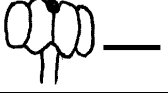

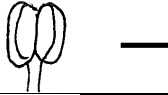

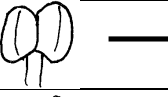
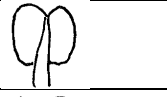


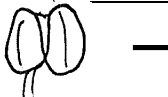

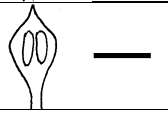
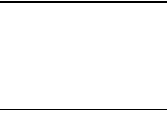
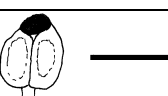

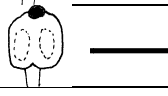

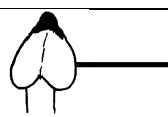

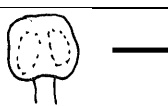

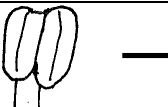

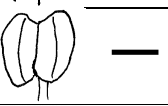
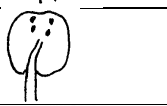
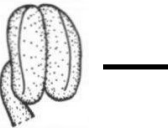
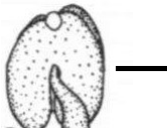
<i>E. populnea</i>		—		F
<i>E. rudis</i>		—		F
<i>E. salicola</i>		—		F
<i>E. stoatei</i>		—	 section	F
<i>E. torquata</i>		—	 section	Cult.
Syncarpieae				
<i>Syncarpia glomulifera</i>		—		Cult.
Leptospermeae				
<i>Kunzea pulchella</i>		—		F
<i>K. recurva</i>		—		F
<i>Leptospermum flavescens</i>		—		F
<i>L. spinosum</i>		—		F
<i>Agonis baxteri</i>		—		F
<i>Agonis flexuosa</i>		—		F
<i>Taxandria spathulata</i>		—		F
Chamelaucieae				
Chamelauciinae				
<i>Actinodium cunninghamii</i>		—		F
<i>Chamelaucium drummondii</i>		—		F
<i>C. floriferum</i>		—		F
<i>C. megalopetalum</i>		—		F
<i>Darwinia chapmaniana</i>		—		F

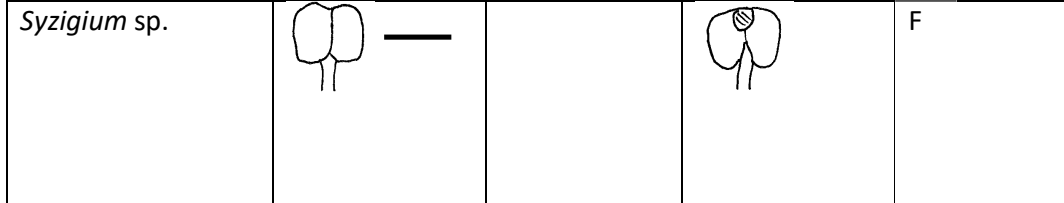
<i>D. collina</i>		—			F (no gland)
<i>D. macrostegia</i>		—	 section		F
<i>D. neildiana</i>		—			F (no gland)
<i>D. oldfieldii</i>					F (no gland)
<i>D. pauciflora</i>		—			F
<i>D. sanguinea</i>		—			F
<i>D. speciosa</i>		—			F (no gland)
<i>D. squarrosa</i>		—	 section		F
<i>D. vestita</i>		—			F (no gland)
<i>D. virescens</i>		—	 section		F
<i>Homoranthus flavescens</i>		—			Cult.
<i>Pileanthus filifolius</i>		—			F
<i>P. peduncularis</i>		—			F
<i>Verticordia aurea</i>		—			Ladd et al. 1999
<i>Verticordia nitens</i>		—			F
Hysterobaeckinae					
<i>Ericomyrtus serpillifolia</i>		—			F
<i>Malleostemon costatus</i>		—			PERTH
<i>M. hursthousii</i>		—			F
<i>M. peltiger</i>		—			F
<i>Oxymyrrhine gracilis</i>		—			Rye 2009

<i>O. coronata</i> Scale 0.5mm			Rye 2009
<i>Scholtzia involucrata</i>			F
<i>S. umbellifera</i>			F
<i>Tetrapora glomerata</i>			F
<i>T. preissiana</i>			F
Astarteinae			
<i>Astartea scoparia</i>			PERTH
<i>Hypocalymma angustifolium</i>			F (no gland)
<i>H. cordifolium</i>			F
<i>H. puniceum</i>			F
<i>Hypocalymma robusta</i>			F
<i>Cyathostemon tenuifolius</i>			F
Micromyrtinae			
<i>Micromyrtus mucronulata</i>			Rye 2010
<i>M. obovata</i>			
<i>M. papillosa</i>			F
<i>M. uniovula</i>			Rye 2002
<i>M. triptycha</i>			F
Hysterobaeckea			
<i>Austrobaeckea verrucosa</i>			F
<i>Babingtonia camphorosmae</i>			F
<i>B. leratis</i>			F

<i>B. pelloeae</i>				Rye 2015
<i>Baeckea gunniana</i>				F
<i>B. pinifolia</i>				Dawson 1978
<i>Baeckea</i> sp. East Nabawa M Trudgeon 21628				F
<i>Balustion pulcherrimum</i>				F
<i>Ericomyrtus drummondii</i>				F
<i>Sannantha whitei</i>				Wilson and Heslewood 2014
<i>Seorsus clavifolius</i>				Rye and Trudgen 2008
<i>S. intratropicus</i>				Rye and Trudgen 2008
Stenostegiinae				
<i>Stenostegia congesta</i>				Bean 1998
Rinziinae				
<i>Enekbatus clavifolius</i>				Trudgen and Rye 2010
<i>Euryomyrtus maidenii</i>				F
<i>E. recurva</i>				Trudgen <u>2001</u>
<i>Rinzia sessilis</i>				Trudgen 1986
<i>Triplarina bancroftii</i>				Bean 1995
<i>T. calophylla</i>				Bean 1995
<i>T. imbricata</i>				Bean 1995

<i>T. nowraensis</i>				Bean 1995
<i>T. paludosa</i>				Bean 1995
<i>T. volcanica</i>				Bean 1995
Thryptomene				
<i>Thryptomene baeckeacea</i>				Cult.
<i>T. denticulata</i>				F
<i>T. hyporhytis</i>				F
<i>T. stapfii</i>				Rye 2014
<i>T. velutina</i>				Rye 2014
<i>Thryptomene</i> sp.FC Payne				Cult
Alutinae				
<i>Aluta</i> sp.				Rye and Trudgeon 2000
Micromyrtinae				
<i>Micromyrtus tryptycha</i>				F
Calytricinae				
<i>Calytrix acutifolia</i>				F
<i>C. angulata</i>				F
<i>C. brachyphylla</i>				F
<i>Calytrix duplistipulata</i>				F
<i>C. fraseri</i>				F
<i>C. nematoclada</i>				F
<i>C. strigosa</i>				F
<i>C. tenuiramea</i>				F

<i>Acmena smithii</i>		—		Cult
<i>Amomyrtus luma</i>		—		F (no gland)
<i>Austromyrtus dulcis</i>		—		F
<i>Calycolpus schonbergianus</i>		—		Kew
<i>Campomanesia rivularis</i>		—		Kew
<i>Lithomyrtus retusa</i>		—		PERTH
<i>Lophomyrtus bullata</i>		—		Cult.(no gland?)
<i>Luma apiculata</i>		—		F (no gland)
<i>Myrceugenia chrysocarpa</i>		—		F
<i>Pisidium guajava</i>		—		Cult.
<i>Ugni molinae</i>		—		Kew
Kanieae				
<i>Tristaniopsis calobuxus</i>		—		F
<i>T. laurina</i>		—		Cult.
Tristanieae				
<i>Cloezia aquarum</i>		—		F
Metrosidereae				
<i>Metrosideros angustifolia</i>		—		Cult.
<i>M. carminea</i>		—		Cult.
<i>M. excelsa</i>		—		Cult.
<i>Tepualia stipularis</i>		—		Dawson 1972
Syzygieae				



Scale bars 0.5mm, Cult. – cultivated and nursery stock; F – Field; Kb – Kirstenbosch Botanic gardens; K – The Herbarium, Kew, PERTH – Western Australian Herbarium; shading – solid black =discrete gland, diagonal shading = gland contained in the connective

References for line drawings from publications –

Bean 1995. Reinstatement and revision of *Triplarina* Raf. (Myrtaceae). *Austrobaileya* 4, 353-367.

Bean T 1998. *Stenostegia congesta* (Myrtaceae), a new genus and species from the Victoria River, Northern Territory, Australia. *Muelleria* 11, 127-132.

Dawson JW 1972. Pacific capsular Myrtaceae 8 *Tepualia*. *Blumea* 20, 335-337.

Trudgen ME 1986. Reinstatement and revision of *Rinzia* (Myrtaceae, Leptospermeae, Baeckeaaceae). *Nuytsia* 5, 415-439.

Trudgen ME 2001. Reinstatement and revision of *Euromyrtus* (Myrtaceae). *Nuytsia* 13, 543-566.

Trudgen ME, Rye BL 2010. *Enekbatus*, a new Western Australian genus of Myrtaceae with a multi-locular indehiscent fruit. *Nuytsia* 20, 229-259.

Rye BL 2002. A revision of south-western Australian species of *Micromyrtus* (Myrtaceae) with five antisepalous ribs on the hypanthium. *Nuytsia* 15, 101-122.

Rye BL 2009. Reinstatement of the Western Australian genus *Oxymyrrhine* (Myrtaceae: Chamelaucieae) with three new species. *Nuytsia* 19, 149-165.

Rye BL 2010. A revision of the *Micromyrtus racemosa* complex (Myrtaceae, Chamelaucieae) of south-western Australia. *Nuytsia* 20, 37-56.

Rye BL 2015. A revision of the south-western Australian genus *Babingtonia* (Myrtaceae, Chamelaucieae). *Nuytsia* 20, 37-56.

Rye BL 2014 An update to the taxonomy of some Western Australian genera of Myrtaceae tribe Chamelaucieae. 3. *Thryptomene*. *Nuytsia* 24, 269-306

Rye B L and Trudgeon M E (2000) *Aluta*, a new Australian genus of Myrtaceae. *Nuytsia* 13, 345-366.

Rye BL ,Trudgen ME 2008. *Seorsus*, a new Gondwanan genus of Myrtaceae with a disjunct distribution in Borneo and Australia. *Nuytsia* 18, 235-257.

Wilson P G, Heslewood M M (2014) An expanded phylogenetic analysis of *Sannantha* (Myrtaceae) and description of a new species. *Australian Systematic Botany* 27, 78-84.

Supplementary Table S2

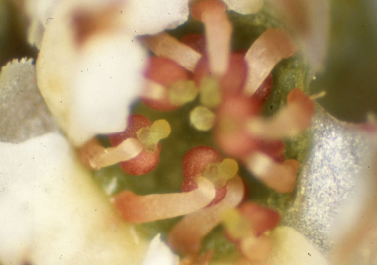

Subfamily	Tribe	Subtribe
Vochysiaceae		
Psiloxylloideae		
Myrtoideae	Xanthostemoneae	
	Lophostemoneae	
	Osborneae	
	Melaleuceae	
	Lindsayomyrteae	
	Eucalypteae	
	Syncarpieae	
	Leptospermeae	
	Myrteae	
	Kanieae	
	Tristanieae	
	Metrodidereae	
	Backhousieae	
	Syzygieae	
	Chamelaucieae	Chamelauciinae
		Hysterobaeckeinae
		Astarteinae
	Stenostegiinae	
	Baeckeinae	
	Rinziinae	
	Thryptomene	
	Alutinae	
	Micromyrtinae	
	Calytricinae	
	Ochrosperminae	

Tribal classification from Thornhill et al. (2015) and subtribes of the Chamelaucieae from Rye et al. (2020).

Supplementary Table S3.

Web addresses or pictures of the flowers of species examined in this study.

Species	Web address or photograph
<i>Babingtonia grandiflora</i>	https://au.images.search.yahoo.com/yhs/search;_ylt=AwrO87P042JlkkITi2E36At.;_ylu=Y29sbwNncTEEcG9zAzEEdnRpZAMEc2VjA3Nj?p=Babingtonia+grandiflora&mkr=27&type=Y143_F163_201897_053122&hsimp=yhs-001&hspart=trp&ei=UTF-8&fr=yhs-trp-001#id=12&iurl=https%3A%2F%2Fwww.friendsofqueensparkbushland.org.au%2Fwp-content%2Fgallery%2Fbaeckea-camphorosmae%2Fbaeckea-camphorosmae-g3.jpg&action=click
<i>Baeckea</i> sp. Murchison River	Not available
<i>Calytrix aurea</i>	
<i>Chamelaucium uncinatum</i>	https://florabase.dbca.wa.gov.au/browse/photo/5498
<i>Eucalyptus conferruminata</i>	https://florabase.dbca.wa.gov.au/browse/photo/5597
<i>E. drummondii</i>	https://florabase.dbca.wa.gov.au/browse/photo/5628
<i>E. leucoxylon</i>	https://au.images.search.yahoo.com/yhs/search;_ylt=Awr.1tqx32JldcsTsRw36At.;_ylu=Y29sbwNncTEEcG9zAzEEdnRpZAMEc2VjA3Nj?p=eucalyptus+leucoxylon&type=Y143_F163_201897_053122&hsimp=yhs-

	001&hspart=trp&ei=UTF-8&fr=yhs-trp-001#id=3&iurl=https%3A%2F%2Fwww.plantmark.com.au%2Fimages%2Fthumbs%2F0265248_eucalyptus-leucoxyton-megalocarpa-fruit-flower.jpg&action=click
<i>Leptospermum laevigatum</i>	https://au.images.search.yahoo.com/yhs/search;_ylt=Awr90WeM42JI9HUTO0g36At.;_ylu=Y29sbwNncTEEcG9zAzEEdnRpZAMEc2VjA3Nj?p=Leptospermum+laevigatum&mkr=27&type=Y143_F163_201897_053122&hsimp=yhs-001&hspart=trp&ei=UTF-8&fr=yhs-trp-001#id=1&iurl=http%3A%2F%2Fwww.gardensonline.com.au%2FUploads%2FPlant%2F2579%2FLeptospermum-laevigatum-flowers-ECU.jpg&action=click
<i>Micromyrtus obovatus</i>	
<i>Rinzia crassifolia</i>	
<i>Scholtzia laxiflora</i>	https://florabase.dbca.wa.gov.au/browse/photo/6034
<i>S. teretifolia</i>	Not available

<p><i>Thryptomene baeckeacea</i></p>		
<p><i>V. grandis</i></p>		
<p><i>Verticordia nitens</i></p>	<p>https://florabase.dbca.wa.gov.au/browse/photo/6101</p>	
<p><i>V. nobilis</i></p>	<p>https://florabase.dbca.wa.gov.au/browse/photo/10822</p>	