

Update to 'A Field Study of the Eucalypts of North-east Queensland'

September 2026, Donald C. Franklin

Update to:

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The book is hereafter referred to as *the Field Study*.

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Changes to scientific names

The new genus *Blakella* has been created to include ghost gums and their allies¹. This was flagged in *the Field Study*, in the last paragraph on page 3 (Box: What is a eucalypt?), as a possible resolution to a long-standing conundrum in interpretation of the evolutionary history of eucalypts. See Box “‘What is a eucalypt?’ revisited” (page 3 of this Update) for an explanation.

This change affects ten species in *the Field Study* area, comprising ghost gums and allies with papery seed capsules—sometimes referred to as the *paper-fruited bloodwoods* (5 species), along with their relatives with more woody seed capsules, Lemon-scented Gum, Cadaghi and three species of yellowjacket (Table 1). There have been no changes to specific names.

Table 1. Changes to scientific names of eucalypt species in the Field Study area.

Scientific name in <i>Field Study</i>	New scientific name	Common name
<i>Corymbia citriodora</i>	<i>Blakella citriodora</i>	Lemon-scented Gum
<i>Corymbia confertiflora</i>	<i>Blakella confertiflora</i>	Broad-leaved Carbeen
<i>Corymbia dallachiana</i>	<i>Blakella dallachiana</i>	Dallachy's Ghost Gum
<i>Corymbia gilbertensis</i>	<i>Blakella gilbertensis</i>	Gilbert River Ghost Gum
<i>Corymbia grandifolia</i>	<i>Blakella grandifolia</i>	Large-leaved Cabbage Gum
<i>Corymbia leichhardtii</i>	<i>Blakella leichhardtii</i>	Leichhardt's Yellowjacket
<i>Corymbia leptoloma</i>	<i>Blakella leptoloma</i>	Paluma Range Yellowjacket
<i>Corymbia peltata</i>	<i>Blakella peltata</i>	Rustyjacket
<i>Corymbia tessellaris</i>	<i>Blakella tessellaris</i>	Moreton Bay Ash
<i>Corymbia torelliana</i>	<i>Blakella torelliana</i>	Cadaghi



Some members of the new genus *Blakella*:
above left – Dallachy's Ghost Gum, B. dallachiana;
above right – Lemon-scented Gum, B. citriodora; and
left: Leichhardt's Yellowjacket, B. leichhardtii.

“WHAT IS A EUCALYPT?” revisited

Science, like time, doesn’t stand still. A challenge for users of science books is that the books become dated. This is particularly problematic with species’ scientific names, changes to which have been numerous in recent decades. Many changes have been driven by new insights into evolutionary relationships provided by the rapid and on-going development and application of phylogenetic techniques and analyses. In the case of eucalypts, these new insights have been profound, upending perceived wisdom (Fig. 1) in seemingly counterintuitive ways—but see Box *Counterintuitive relationships?* on the next page.

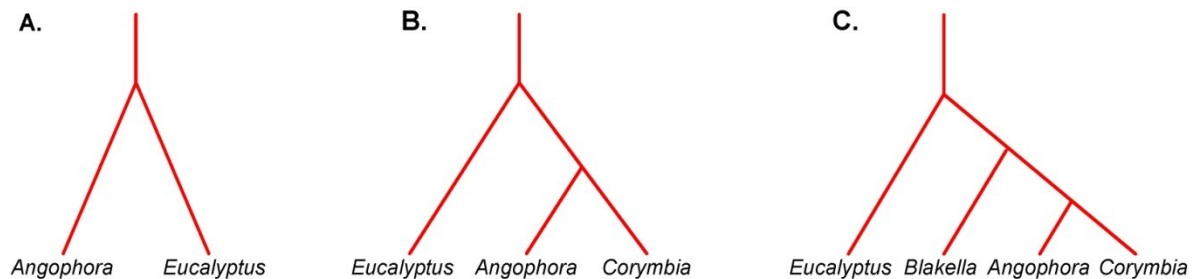


Figure 1. Relationships among eucalypts as understood before 1993 (A.), from then until 2024 (B.), and since 2024 (C.), expressed as evolutionary trees with generic names as accepted during the relevant period.

The species included in *Eucalyptus* changed from A. to B.; the species included in *Corymbia* changed from B. to C.

The evolutionary relationship between (red) bloodwoods, ghost gums and *Angophora* (often referred to as ‘apples’) has been a long-standing conundrum. Two recent but independent molecular studies have now revealed that (red) bloodwoods are more closely related to *Angophora* species than to ghost gums and their allies^{1,2}. Confidence in this resolution is provided by both studies’ use of many nuclear genes (101 & 568 respectively) from each of many species.

Thus, the genus *Corymbia* as employed in *the Field Study*, including both (red) bloodwoods and ghost gums and allies, is no longer viable: it is demonstrably not a group of *nearest relatives* (technically, it is not *monophyletic*). To resolve this naming problem, the subgenus of ghost gums and allies—*Blakella*—has been elevated to form a new genus¹. This isn’t the only possible naming solution, and the proposal has aroused controversy³ cf ⁴. Nevertheless, *Blakella* has now been accepted by the Queensland and Northern Territory Herbaria^{5,6}. The most species affected occur in Queensland (23), followed by Western Australia (13) and Northern Territory (12) (see ⁷ for other jurisdictions), so the decisions of these herbaria are pivotal. At the time of writing, other affected state and international herbaria have not yet announced a decision that I can find. Other sources that have already adopted *Blakella* as a genus include Hopper (2025)⁸ and the Global Biodiversity Information Facility⁹.

Could there be further changes to generic names?

The only further unresolved conundrum at the level of the family trees (Fig. 1C) is whether *Arillastrum*—a genus containing a single species endemic to New Caledonia—is sister to the eucalypts or embedded among them^{1,10,11}, i.e. did it branch off from eucalypts a little before, or a little after eucalypts began to diverge? However, resolution of this question either way will not require changes to genus or specific names¹ provided we persist with the current nomenclature including *Blakella*. Whilst it was suggested in the 1990s that *Eucalyptus* be split into genera of more manageable size¹², this was never published; there is no pressing reason for it such as an unresolved conundrum, and the suggestion has not received further support.

It follows that the definition of ‘eucalypt’ should be amended to include *Blakella*. Thus:

a eucalypt is any member of the genera *Eucalyptus*, *Angophora*, *Blakella* or *Corymbia*.

Counterintuitive relationships?

Petals or not? Sepals or not?

A sister relationship between *Angophora* and *Eucalyptus* (Fig. 1A) is intuitive and appealing: *Angophora* has petals and no bud cap, whereas a lack of petals and presence of a bud cap (operculum) is a distinctive feature of other eucalypts. Does the resolution of relationships expressed in Fig. 1C, showing that this intuition is wrong, suggest that *Angophora* re-evolved petals ‘from scratch’? As doubtless many genes are involved in the transition, this is highly improbable.

There are at least two ways of looking at this. Firstly, the contrast between petals and bud caps is a misleading simplification. Eucalypt bud caps vary; some consist of a single-layered cap formed from modified petals, others have two layers consisting of modified sepals and modified petals respectively, and these layers may be loosely associated, or fused; even this is a simplification^{1,13}. Further, many other members of the myrtle family (Myrtaceae), to which eucalypts belong, have bud caps, referred to by an equivalent term—*calyptra*. Calyptra have evolved multiple times, with occasional evolutionary reversions to the ‘normal’ flower form¹⁴. Indeed, one should not be surprised that petals re-appeared in the eucalypt lineage, because sepals have. Note the obvious sepals in two *Field Study* species, Darwin and Sandstone Stringybarks (*E. tetradonta* and *E. megasepala*). For a detailed review of the evolution of eucalypt flower bud structures, see ¹.

The second perspective is necessarily speculative because the genetic mechanism behind the reappearance of petals in *Angophora* has not been investigated. The solution may well rest with gene switches. It is likely that many, perhaps all eucalypts have within their gene pool (genome) the potential to develop distinct sepals and petals, or alternatively bud caps modified from either or both. It could be as simple as a single gene acting as a switch on petal genes, and evolution of a single gene is eminently more plausible than re-evolution of petals ‘from scratch’. Another possibility, perhaps less likely, rests in the field of *epigenetics*—factors which control the expression of genes¹⁵; epigenetic factors are in some cases heritable^{16,17}.

Is Blakella a sensible grouping?

It is not self-evident that ghost gums with their smooth bark and papery seed capsules belong together with species with woody seed capsules: the spotted gums (including Lemon-scented Gum, *B. citriodora*), Cadaghi (*B. torelliana*), and the yellowjackets which have thick, rough bark. And yet, phylogenetic studies (well over a dozen) have unanimously demonstrated the closeness of the relationship (technically, they are *monophyletic* relative to other eucalypts). Example studies range from a pioneering study in 1995¹⁸ to modern, much more detailed studies^{1,2,19}. Morphologically, all *Blakella* species have a similar bud cap structure.

Within the *Angophora–Blakella–Corymbia* group, the genera can be distinguished as follows:

Angophora has no bud cap; it has obvious (free) sepals and petals. See Figs. 62 & 71 [p35,37] in *the Field Study*;

Blakella has bud caps comprising two separate layers, the outer layer usually shed early leaving a scar on the bud¹ (see Fig. 58 [p34] in *the Field Study*); it does not have obvious sepals or petals; and

Corymbia has the two bud cap layers fused so they are shed together as the flower opens, so that there is no scar on the bud (Fig. 57 [p34] in *the Field Study*); it does not have obvious sepals or petals.

Additional information about species' distributions

Systematic mapping of eucalypt species was undertaken for *the Field Study*. Since then, I have made opportunistic observations mainly in areas that I hadn't previously visited. Understanding of the ranges of five species has changed sufficiently that text descriptions are no longer complete:

***Corymbia clarksoniana*, Clarkson's Bloodwood**, p63. This species occurs on Fitzroy Island, where it is quite common among granite rocks.

***Blakella (Corymbia) dallachiana*, Dallachy's Ghost Gum**, p74. In *the Field Study*, I reported a continuous population on the study area's south coastal plain extending almost north to Ingham. I have since found a small population on boulderous granitic hills along the Lookouts track behind Cardwell. This is 55 km further north; other populations might yet be discovered.

***Eucalyptus howittiana*, Howitt's Box**, p225. Based on an observational report lodged with the Atlas of Living Australia by a seemingly reliable source, in *the Field Study* I mapped and described an outlying record at Hidden Valley. With botanist Rigel Jensen, I have since visited the *exact* site. Not only did we not find the species, but the habitat there and throughout the Hidden Valley area is quite different to the specialised habitat in which Howitt's Box normally occurs. The broad-leaved species present that might have generated confusion was *Eucalyptus moluccana*, Gum-topped Box. The report has since been removed from Atlas of Living Australia, and should be regarded as an error.

***Eucalyptus pachycalyx*, Pumpkin Gum**, p258-9. Based on several herbarium records, I mentioned an outlying population on drier hills west of Koombooloomba. We (Paul Williams, DCF and others) have since confirmed this, finding several populations—one extensive—in a remote eastern corner of Yourka Reserve.

***Eucalyptus pellita*, Large-fruited Red Mahogany**, p263. This species also occurs on Fitzroy Island.

Additional locations at the level of cells on *the Field Study* maps are:

Species	Map page no.	Additional locations
<i>Angophora floribunda</i>	49	downstream Sandy Ck (Seaview Range)
<i>Corymbia clarksoniana</i>	63	Kings Plains Station; Mulligan Hwy near Lakeland; Collins Weir Road
<i>Blakella (Corymbia) confertiflora</i>	69	Kings Plains Station
<i>Blakella (Corymbia) dallachiana</i>	74	Kings Plains Station
<i>Corymbia erythrophloia</i>	82	North-east of Lakeland; Mount Fox
<i>Corymbia intermedia</i>	94	west side of Windsor Tableland
<i>Corymbia nesophila</i>	109	Kings Plains Station
<i>Blakella (Corymbia) tessellaris</i>	142	Kings Plains Station; Collins Weir Road
<i>Blakella (Corymbia) torelliana</i>	147	Shiptons Flat
<i>Eucalyptus camaldulensis</i>	176	Kings Plains Station—subspecies <i>simulata</i>
<i>Eucalyptus chartaboma</i>	184	Collins Weir Road
<i>Eucalyptus chlorophylla</i>	189	Kings Plains Station
<i>Eucalyptus cullenii</i>	206	Kings Plains Station
<i>Eucalyptus grandis</i>	214	west side of Windsor Tableland
<i>Eucalyptus leptophleba</i>	228	Kings Plains Station; Cardwell Forest Drive
<i>Eucalyptus pellita</i>	263	Mourilyan and Mourilyan Harbour
<i>Eucalyptus platyphylla</i>	274	Kings Plains Station; Mount Fox; Shiptons Flat
<i>Eucalyptus tereticornis</i>	302	Kings Plains Station; Etty Bay; Shiptons Flat
<i>Eucalyptus tetradonta</i>	309	Kings Plains Station
<i>Eucalyptus tindaliae</i>	316	west side of Windsor Tableland

Miscellaneous additions and corrections

p17, 3rd para, 1st line: insert “area” after “study”

p41: italicise “*C. nesophila*”

p46, Distribution, 3rd paragraph, 2nd line: insert space between “4” and “cells”

p46, Where to find this species, 2nd line: change “Appendix 1” to “the Appendix”

p52, *Corymbia abergiana*, Range Bloodwood. Description, Leaves: add at end “On seedlings and early-stage basal resprouts, stems may be bristly and the leaves paired (opposite), broad (sometimes rounded), with an obvious intramarginal vein and widely-spaced lateral veins, sometimes even with the stalk attached to the leaf underside (peltate).”

p53, *Corymbia abergiana*, Range Bloodwood. Where to find this species, Paluma: the road from Paluma is now all sealed.

p56, *Blakella (Corymbia) citriodora*, Lemon-scented Gum. Description, Flowering: in 2023, the dry season flowering was strong in at least two districts and continued through to early August.

p105, *Blakella (Corymbia) leptoloma*, Description, Flowering: change text to “The few records are from May, July and October.”

p172: spell “Minnamoolka”

p259, *Eucalyptus pachycalyx*, Pumpkin Gum. Distribution: this species has now been found in five locations in south-eastern Qld and two in north-eastern NSW.

p260, *Eucalyptus pachycalyx*, Pumpkin Gum. Conservation Status: there are multiple stands, one extensive, in Yourka Reserve, a property managed for conservation by the Bush Heritage Fund.

p274: spell “Hinchinbrook”

p284: spell “medicinal”

p287, *Eucalyptus resinifera*, Small-fruited Red Mahogany. I was unable to obtain a photograph of flowers of this species. Here is a fine photo of them, kindly provided by Christina Suttner.



p290, *Eucalyptus shirleyi*, Shirley’s Ironbark. Where to find, Paluma: this road is now sealed most of the way to the *E. shirleyi* site.

Acknowledgements

I am grateful to Rachael Fowler for advice on eucalypt phylogenetics, and Simon Glead for many useful suggestions about presentation. Christina Suttner provided the photo of flowers of Small-fruited Red Mahogany. Paul Williams and others jointly located Pumpkin Gum at Yourka Reserve, and Rigel Jensen assisted with the field check of the putative Howitt's Box location.

References

- ¹ Crisp MD *et al.* 2024. Perianth evolution and implications for generic delimitation in the eucalypts (Myrtaceae), including the description of the new genus, *Blakella*. *Journal of Systematics and Evolution* 62: 942-962.
- ² Orel HK *et al.* in press. Temporal dynamics of incomplete lineage sorting, introgression and divergence in eucalypts distributed across an expansive and ancient landscape. *Annals of Botany*
- ³ Nicolle D *et al.* 2025. The genus problem – *Eucalyptus* as a model system for minimising taxonomic disruption. *Taxon* 74: 495-506.
- ⁴ Cook LG *et al.* 2025. *Eucalyptus* was not the problem: A response to “The genus problem – *Eucalyptus* as a model system for minimising taxonomic disruption” by Nicolle & al. *Taxon* 74: 507-514.
- ⁵ Queensland Herbarium. 2024. *Census of the Queensland Flora and Fungi*. Queensland Herbarium, Queensland Government: Brisbane.
- ⁶ Department of Lands, Planning and Environment, Northern Territory Government. 2025. *NT Eucalypts Changing Names*. <https://environment.nt.gov.au/news/2025/nt-eucalypts-changing-names#>, viewed 31 March 2026.
- ⁷ Other jurisdictions with *Blakella* species: New South Wales – 5; Papua New Guinea – 3; Indonesia (West Papua) – 2; Victoria – 2, South Australia – ?1.
- ⁸ Hopper SD. 2025. *Eucalyptus*. Reaktion Books: London.
- ⁹ Global Biodiversity Information Facility. <https://www.gbif.org/>, viewed 12 Sept. 2026
- ¹⁰ Ladiges PY *et al.* 2003. Australian biogeographical connections and the phylogeny of large genera in the plant family Myrtaceae. *Journal of Biogeography* 30: 989-998.
- ¹¹ Thornhill AH *et al.* 2015. Interpreting the modern distribution of Myrtaceae using a dated molecular phylogeny. *Molecular Phylogenetics and Evolution* 93: 29-43.
- ¹² it was suggested by the late Lawrie Johnson, an eminent eucalypt taxonomist, as recounted in ² on pages 502-503.
- ¹³ Slee AV *et al.* 2020. *EUCLID. Eucalypts of Australia. Fourth Edition*. Centre for Australian National Biodiversity Research: Canberra. <https://apps.lucidcentral.org/euclid/text/intro/index.html>.
- ¹⁴ Vasconcelos TNC *et al.* 2020. Convergent evolution in calyptrate flowers of Syzygieae (Myrtaceae). *Botanical Journal of the Linnean Society* 192: 498-509.
- ¹⁵ Grant-Downton RT, Dickinson HG. 2006. Epigenetics and its implications for plant biology 2. The 'epigenetic epiphany': Epigenetics, evolution and beyond. *Annals of Botany* 97: 11-27.
- ¹⁶ Skinner MK. 2015. Environmental epigenetics and a unified theory of the molecular aspects of evolution: A neo-Lamarckian concept that facilitates neo-Darwinian evolution. *Genome Biology and Evolution* 7: 1296-1302.
- ¹⁷ Manjrekar J. 2017. Epigenetic inheritance, prions and evolution. *Journal of Genetics* 96: 445-456.
- ¹⁸ Udovicic F *et al.* 1995. Phylogeny of *Eucalyptus* and *Angophora* based on 5S rDNA spacer sequence data. *Molecular Phylogenetics and Evolution* 4: 247-256.
- ¹⁹ Thornhill AH *et al.* 2019. A dated molecular perspective of eucalypt taxonomy, evolution and diversification. *Australian Systematic Botany* 32: 29-48.