

***Eucalyptus revelata*, a rare new species related to *E. mooreana*  
(Myrtaceae) from the Kimberley region of Western Australia**

**Dean Nicolle<sup>1</sup> and Russell L. Barrett<sup>2</sup>**

<sup>1</sup>Currency Creek Arboretum, PO Box 808, Melrose Park 5039, South Australia.

<sup>2</sup>Australian National Herbarium, Centre for Australian National Biodiversity Research,  
National Research Collections Australia, CSIRO, GPO Box 1600,  
Canberra 2601, Australian Capital Territory

College of Medicine, Biology and Environment, Research School of Biology,  
The Australian National University,

Acton, Canberra 2601, Australian Capital Territory

Present address: National Herbarium of New South Wales,

Royal Botanic Gardens and Domain Trust,

Mrs Macquaries Road, Sydney, 2000, New South Wales.

<sup>1</sup>Corresponding author; email: dn@dn.com.au

### Abstract

Nicolle, D. & Barrett, R.L. *Eucalyptus revelata*, a rare new species related to *E. mooreana* (Myrtaceae) from the Kimberley region of Western Australia. *Nuytsia* 29: 109–118 (2018). Two variants of *E. mooreana* W.Fitzg. *s. lat.*, a rare species from the Kimberley region of Western Australia, are found to be specifically distinct. A revised description of *E. mooreana* is provided and *E. revelata* D.Nicolle & R.L.Barrett is described to accommodate plants with a more sprawling habit, less powdery and less uniformly-coloured bark, non- or weakly-pruinose features, green leaves and generally smaller fruits. Both *E. mooreana* and *E. revelata* are restricted to steep rocky slopes and mountain ridges in the higher parts of the King Leopold Ranges. A key to the terminal taxa of *Eucalyptus* ser. *Subexsertae* (Benth.) Blakely (the ‘northern white gums’) is provided. Authorship of the name *E. mooreana* is discussed and attributed to W.V. Fitzgerald rather than J.H. Maiden. A new lectotype is designated as the previous designation was found to be ineffective.

### Introduction

*Eucalyptus mooreana* W.Fitzg. is restricted to the King Leopold Ranges in the Kimberley region of northern Western Australia. Two morphological variants of *E. mooreana* have long been recognised, with herbarium specimens of the species annotated as either a glaucous (typical) variant or a non-glaucous variant by L.A.S. Johnson in the National Herbarium of New South Wales (NSW) and by C.R. Dunlop in the Northern Territory Herbarium (DNA). However, the occurrence of *E. mooreana* on steep rocky terrain in a remote and relatively inaccessible region has limited investigation of these variants. All previous publications including *E. mooreana* (e.g. Gardner 1979; Chippendale 1988; Rye 1992; Brooker & Kleinig 1994, 2004; Slee *et al.* 2006) have also included the non-glaucous variant as a minor part, and several illustrate this variant as *E. mooreana*. A recent survey of the King Leopold Ranges Conservation Park by Western Australia’s Department of Biodiversity,

Conservation and Attractions (formerly the Department of Parks and Wildlife) has resulted in many new collections and an enhanced understanding of the two variants, to the extent that we are now confident that they represent different species. The two species are distinctive both in the field and in herbaria, most notably in the type variant of *E. mooreana* having greyish, pruinose leaves and the other variant, described here as *E. revelata* D.Nicolle & R.L.Barrett, having green, non-pruinose leaves.

*Eucalyptus mooreana* and *E. revelata* are part of *E.* subg. *Symphyomyrtus* (Schauer) Brooker sect. *Exsertaria* L.D.Pryor & L.A.S.Johnson ex Brooker ser. *Subexsertae* (Benth.) Blakely (following Brooker 2000), a series of 17 terminal taxa (including several undescribed taxa) collectively known as the ‘northern white gums’. The series is restricted to northern Australia and adjacent islands to the north, including New Guinea and some of the Lesser Sunda Islands. It is distinguished by the combination of its resprouter regenerative strategy (Nicolle 2006), reniform cotyledons, smooth, relatively uniformly-coloured, often powdery, seasonally-decorticating bark, apparently glandless branchlet pith, concolorous leaves with dense to very dense tertiary venation and scattered or no visible oil glands (Brooker & Nicolle 2013), axillary, unbranched inflorescences, versatile, dorsifixed anthers, ovules in six or eight vertical rows, more-or-less annular fruit disc, and tooth-edged seeds.

Both species occur in remote, relatively inaccessible, and quite poorly botanically surveyed areas, and are long-lived, large, woody plants with presumed annual flowering cycles. As such, field collections of these two species are unlikely to represent any real threat to their conservation.

#### Key to the terminal taxa of *Eucalyptus* series *Subexsertae*

1. Mature crown mostly or entirely composed of opposite, sessile, juvenile leaves
  2. Crown leaves not connate; well-formed tree of floodplains
    3. All crown leaves sessile and pruinose ..... ***E. apodophylla* subsp. *apodophylla***
    - 3: Some crown leaves shortly petiolate and non-pruinose ..... ***E. apodophylla* subsp. *provecta*<sup>1</sup>**
  - 2: Crown leaves mostly connate; poorly-formed tree or mallee of rocky hills
    4. Crown leaves greyish, strongly pruinose ..... ***E. mooreana***
    - 4: Crown leaves green, not pruinose ..... ***E. revelata***
- 1: Mature crown mostly or entirely composed of non-opposite, petiolate, adult leaves
  5. All adult leaves orbicular to deltoid
    6. Umbellasters mostly 3-flowered; fruits 15–24 mm wide ..... ***E. pantoleuca***
    - 6: Umbellasters mostly 7-flowered; fruits 5–10 mm wide

<sup>1</sup>*Eucalyptus apodophylla* subsp. *provecta* Brooker & Kleinig (Brooker & Kleinig 1994) occurs over a 50 km range on Doongan and Theda Stations in the Kimberley region of WA, and may be of hybrid origin (typical *E. apodophylla* Blakely & Jacobs ex Blakely × *E. bigalerita* F.Muell.). Slee *et al.* (2006) consider the subspecies to be synonymous with typical *E. apodophylla*. Further research is required to ascertain the status of subsp. *provecta*.

7. Fruits mostly <6 mm diam..... **E. tintinnans**
- 7: Fruits mostly >6 mm diam.
8. Adult leaves glossy, green..... **E. bigalerita**
- 8: Adult leaves dull, green to blue-green to greyish
9. Seedling and adult leaves not pruinose..... **E. platyphylla**
- 9: Seedling leaves pruinose; adult leaves pruinose or not
10. Adult leaves deltoid, pruinose or not (south-eastern New Guinea) ..... **E. sp. Port Moresby**<sup>2</sup>
- 10: Adult leaves orbicular, pruinose (Arnhem Land, NT) ..... **E. sp. Arnhem Land**<sup>3</sup>
- 5: Adult leaves mostly lanceolate to ovate or elliptic
11. Buds globular; seeds flattened-ovoid, hilum ± ventral; well-formed tree of floodplains and creeks
12. Buds and fruits sessile..... **E. houseana**
- 12: Buds and fruits pedicellate
13. Adult leaves mostly lanceolate..... **E. alba** var. **australasica**
- 13: Adult leaves broad-lanceolate to ovate or elliptic
14. Buds often pruinose (Lesser Sunda Islands)..... **E. alba** var. **alba**
- 14: Buds not pruinose (northern Australia and adjacent islands) ..... **E. sp. Melville Island**<sup>4</sup>
- 11: Buds ovoid; seeds pyramidal, hilum ± terminal; poorly-formed tree of rocky hills
15. Adult leaves glossy, green ..... **E. glomericassis**
- 15: Adult leaves dull, green to blue-green
16. Umbellasters mostly 3-flowered; peduncles mostly <5 mm long..... **E. gregoriensis**
- 16: Umbellasters mostly 7-flowered; peduncles mostly >5 mm long
17. Fruits 7–12 mm diam., often pruinose..... **E. cupularis**
- 17: Fruits 4–6 mm diam., not pruinose..... **E. herbertiana**

<sup>2</sup>*Eucalyptus* sp. Port Moresby (P. Darbyshire 601) has been nominated as the phrase name for northern white gums related to *E. platyphylla* F.Muell. from the Central Province of Papua New Guinea (Nicolle 2015). Representative specimen: Kairuku Subdistrict, Kanosia plantation, Papua New Guinea, 4 July 1962, P. Darbyshire 601 (CANB, K, L, NSW).

<sup>3</sup>*Eucalyptus* sp. Arnhem Land (K.D. Hill 3984 & L.C. Stanberg) has been nominated as the phrase name for northern white gums related to *E. platyphylla* from parts of Arnhem Land and Kakadu National Park in the NT (Nicolle 2015). Representative specimen: 152.9 km from Murganella road on Maningrida road, Northern Territory, 31 Aug. 1991, K.D. Hill 3984 & L.C. Stanberg (BRI, CANB, DNA, NSW).

<sup>4</sup>*Eucalyptus* sp. Melville Island (K.D. Hill 907, L.A.S. Johnson & D. Benson) has been nominated as the phrase name for northern white gums related to *E. alba* Reinw. ex Blume from the far north coast and adjacent islands of WA and the NT (Nicolle 2015). Representative specimen: S of Pickataramoor on road to Poonalie Beach, Melville Island, Northern Territory, 17 July 1984, K.D. Hill 907, L.A.S. Johnson & D. Benson (BRI, CANB, DNA, NSW, PERTH).

## Taxonomy

**Eucalyptus mooreana** W.Fitzg., *The Western Mail (Perth)* 21(1066); 10, pl. p. 25 (2 June 1906). *Eucalyptus mooreana* W.Fitzg. ex Maiden, J. & *Proc. Roy. Soc. New South Wales* 47: 221–223 (1914). *Lectotype*: summit of Mt Rason [Mt Hart], King Leopold Range, Western Australia, [4] September 1905, *W.V. Fitzgerald* 1472 (*lecto*: NSW 41842, here designated; *isolecto*: BISH 1003629 image!, BM 001015293 image!, CANB 408833<sup>5</sup>, K 000279811 image!, PERTH 01006991, PERTH 01007009, PERTH 01007017, PERTH 01007025, US 00409814 image!). *Residual syntypes*: summit of Mt Broome, Western Australia, [20] May 1905, *W.V. Fitzgerald* 830, *p.p.* (*syn*: PERTH 01052845); summit of Mt Leake, Western Australia, [3] July 1905, *W.V. Fitzgerald* 1202 (*syn*: NSW 304187, PERTH 01281178). *Excluded syntype*: summit of Mt Broome, Western Australia, [20] May 1905, *W.V. Fitzgerald* 830, *p.p.* (*syn*: NSW 304186) = *Eucalyptus revelata* D.Nicolle & R.L.Barrett.

*Illustrations*. J.H. Maiden, *Crit. Revis. Eucalyptus* 5: pl. 179, Figure 1A–E (1920); C.A. Gardner, *Eucalypts West. Austral.* p. 134, Figure 48 (1979); G. Chippendale, *Fl. Austral.* 19: 322, Figure 90K (1988); S.D. Hopper *et al.*, *West. Austral. Endangered Fl.* p. 62, Figure 142 (1990); B.L. Rye in J.R. Wheeler (ed.) *Fl. Kimberley Region* p. 521, Figure 156K (1992); M.I.H. Brooker & D.A. Kleinig, *Field Guide to Eucalypts Vol. 3. Northern Australia*, 1<sup>st</sup> edn & 2<sup>nd</sup> edn, p. 242 all images (1994, 2004); Slee *et al.*, *EUCLID Eucalypts of Australia* CD ROM, *Eucalyptus mooreana* upper left image only (2006).

*Poorly-formed tree* or *obligate mallee*, 1–6 m tall; lignotuber present (combination resprouter of Nicolle 2006). *Bark* smooth throughout, decorticating annually, powdery, white to slightly salmon pink. *Branchlets* pruinose, lacking pith glands. *Cotyledons* reniform. *Seedling leaves* opposite, petiolate, narrowly ovate, glabrous, dull, green, not pruinose. *Mature crown* composed entirely of juvenile leaves. *Juvenile leaves* opposite, sessile, ovate to broad-lanceolate, 45–140 mm long, 38–92 mm wide, concolorous, dull, greyish, strongly pruinose (at least when young); tertiary venation very dense; oil glands numerous, unconnected to vein network (island oil glands). *Inflorescences* held erect, 7–9-flowered; peduncles angular in T.S., stout, 7–18 mm long; pedicels ± absent. *Flower buds* diamond-shaped, pruinose, 10–14 mm long, 5–7 mm diam.; hypanthium slightly angular; operculum smooth, ± hemispherical to very slightly beaked. *Flowers* white, staminal filaments irregularly-flexed in bud; ovules in 6 vertical rows on each placenta. *Fruits* cupular, smooth, usually pruinose (at least when young), 6–9 mm long, 7–11 mm diam.; disc ± level; valves 4, strongly exerted above the rim. *Seeds* dark brown to black, obliquely pyramidal to elongate, 1–2 mm long. (Figure 1)

*Diagnostic characters*. *Eucalyptus mooreana* is distinguished within *Eucalyptus* ser. *Subexsertae* by its poorly-formed tree or mallee habit, its pruinose branchlets, its mature crown of opposite, sessile, often connate, pruinose juvenile leaves, its 7–9-flowered inflorescences, and its hemispherical to very slightly beaked opercula. Characters distinguishing it from *E. revelata* are its generally more upright or tree-like habit, its consistently powdery, uniformly white bark, its strongly pruinose branchlets, buds and fruits, its greyish, pruinose leaves, and its generally larger, 4-valved fruits.

*Specimens examined*. WESTERN AUSTRALIA: [localities obfuscated for conservation reasons] King Leopold Range, 29 Oct. 1982, *M.I.H. Brooker* 7756 (CANB, NSW, PERTH); Gibb River Rd, 12 Dec. 2009, *P. Docherty* 114 (BRO., PERTH); between Mt Vincent and Mt Chalmers, 26 May 2012, *P. Docherty* 291 (BRO., PERTH); 9 Sep. 1980, *C.C. Done* 310 (CANB); Lady Forrest Range,

<sup>5</sup>The CANB specimen is labelled ‘August 1905, *W.V. Fitzgerald* 287’, however both the date and collection number must be in error. Examination of a typescript of Fitzgerald’s expedition diary (Fitzgerald 1905) shows that Mt Rason was visited twice, first on 28 July 1905 [specimen numbers 1281–1284], and secondly on 4 September [specimen numbers 1471–1474].

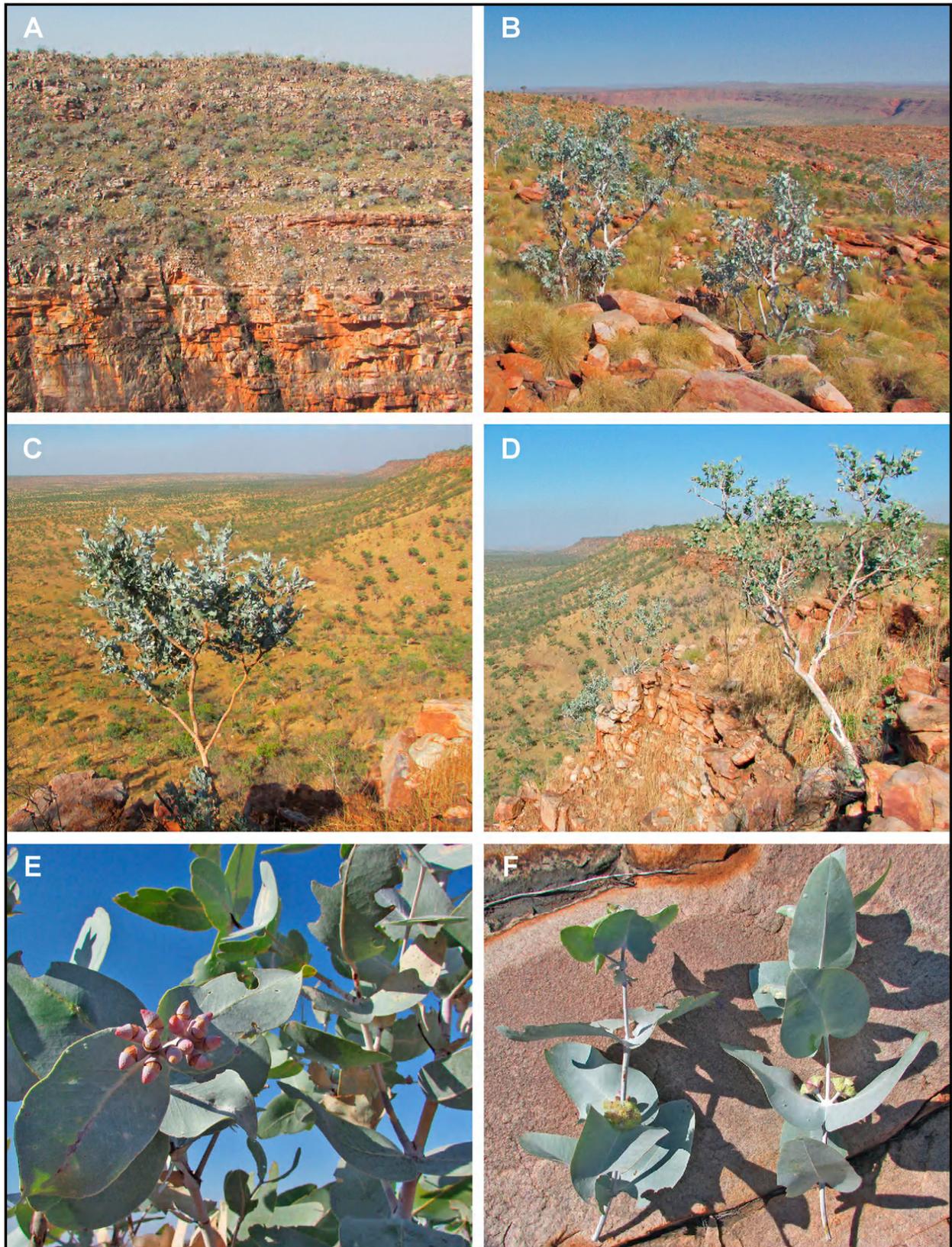


Figure 1. *Eucalyptus mooreana*. A – habitat on south-facing cliff on Mt Vincent; B – habitat and habit on Bold Bluff; C – habit of plant near Rifle Point; D – habit of plant at Precipice Range (note the more erect habit (compared to *E. revelata*) at all sites); E – crown foliage and flower buds; F – crown foliage and flowers. Photographs by Tim Willing.

7 Nov. 1986, C.C. Done 748 (PERTH); King Leopold Range, Apr. 1921, C.A. Gardner 578 (PERTH); Mt Bell, 30 July 1984, K. Hill 973, L. Johnson & D. Benson (NSW); King Leopold Ranges, 4 June 2006, T. Sinclair & T. Willing 1 (PERTH); King Leopold Ranges, 5 June 2006, T. Sinclair & T. Willing 3 (PERTH); Mt Ord, 5 June 2006, T. Sinclair & T. Willing 4 (CANB, PERTH); Lady Forrest Range, 5 June 2006, T. Sinclair & T. Willing 5 (CANB, PERTH); Mt Leake, 23 Sep. 2014, T. Sonneman & T. Willing 8 (PERTH); King Leopold Range Conservation Park, 23 Sep. 2014, T. Sonneman & T. Willing 10 (PERTH); Mt Ord, 24 Sep. 2014, T. Sonneman & T. Willing 13 (PERTH); Lady Forrest Range, 24 Sep. 2014, T. Sonneman & T. Willing 17 (PERTH); Mt Herbert, 24 Sep. 2014, T. Sonneman & T. Willing 19 (PERTH); Mt Vincent, 24 Sep. 2014, T. Sonneman & T. Willing 21 (PERTH); Gibb River Rd, 5 Sep. 2006, L.S.J. Sweedman 7000 (KPBG, PERTH); Mt Leake, 10 Aug. 1991, T. Willing 471 (DNA, PERTH).

*Distribution and habitat.* Restricted to the western part of the King Leopold Ranges (west of the Fitzroy River) in the Kimberley region of Western Australia. The species has been collected from a number of mountains and ridges, from Mt Hart in the north-west to Mt Leake in the south-east, over a linear range of about 130 km. It grows on the steep rocky slopes, ridges and summits of the higher sandstone hills and mountains in the ranges, and is also likely to occur on other ridges of similar altitude within this range. Some populations occur on lower-altitude rocky ridges (e.g. Lady Forrest Range) but are still relatively high in the landscape. Within populations, the plants are scattered in very open low woodland with *Corymbia collina*, *Eucalyptus lirata* and *E. phoenicea*, and with a *Triodia* ground storey.

*Conservation status.* *Eucalyptus mooreana* has been considered a rare species for several decades (Hopper *et al.* 1990; Briggs & Leigh 1996; Brown *et al.* 1998; Smith 2018). It is Declared Rare Flora, specially protected under the *Wildlife Conservation Act 1950* and is listed as Vulnerable under Schedule 3 of the *Wildlife Conservation (Rare Flora) Notice 2016*, meaning that it is likely to become extinct or rare. The species has been collected from about 12 sites, most of which occur within the remote King Leopold Ranges Conservation Park, and it is likely to be present in other similarly inaccessible sites. Total individual numbers are not known. The species is long-lived and fire tolerant. Even with the exclusion of *E. revelata* (described below), recent collections of *E. mooreana* indicate that it is more widespread than previously thought, and that its conservation status should be reassessed, especially considering its longevity, the remote and relatively inaccessible sites on which it occurs, and the lack of any foreseeable threats other than accelerated climate change.

*Valid publication and authorship.* While generally attributed to Maiden (1914), as Maiden noted, the name itself was published by Fitzgerald (1906) in *The Western Mail* with a brief description and a photograph. This publication has been considered a *nomen subnudum* in the Australian Plant Name Index (<https://biodiversity.org.au/nsl/>). The descriptive portion of the text is as follows: 'It forms a small crooked tree, with usually mealy-white leaves and pale yellow flowers.' As brief as this description is, it is remarkably diagnostic for species known from the Kimberley region. At the time of description, the only named species with glaucous leaves occurring in the Kimberley region was *E. pruinosa* Schauer, which Fitzgerald collected in 1906, but subsequent to publication of his article in *The Western Mail*. *Eucalyptus pruinosa* is found in the east Kimberley, on low-lying flats, not on rocky sandstone hills. We therefore conclude that the brief statement is sufficient to be diagnostic, especially once combined with the habitat and illustration. Fitzgerald (1906) included a photograph of some of the pressed material he collected. This appears to have comprised three representative pieces, later separated and distributed, with one piece clearly identifiable as the isoelectotype sheet now at BM. Fitzgerald did prepare a full description of the species which was published by Maiden (1914). This had been intended for inclusion in Fitzgerald's review of the flora of the Kimberley, but owing to delays in part imposed by World War 1, the review was not published until much later (Fitzgerald

1918). *Eucalyptus mooreana* was shortly afterwards included in Maiden's book series *A critical revision of the genus Eucalyptus* (Maiden 1920).

*Lectotypification.* Maiden (1920: 101), in the explanation for Figure 179, indicated material from 'Mt Rason' as 'the type'. This has previously been interpreted as an effective lectotypification. There is no citation of a collection number or institution associated with this collection, and we have now located numerous specimens from Mt Rason, with differing collection information (one specimen labelled Aug. 1905, *Fitzgerald* 287 and others labelled Sept. 1905, *Fitzgerald* 1472), so Maiden's (1920) designation is not effective. The acceptance of *Fitzgerald* (1906) as the place of first publication probably also invalidates Maiden's choice. We select NSW 41842 as the lectotype because this is a good quality, fruiting specimen that represents the typical variant of *E. mooreana*, and is probably the main sheet Maiden was referring to.

*Common names.* Mountain White Gum, King Leopold Range Mallee, Moore's Gum.

*Notes.* *Eucalyptus mooreana* is clearly closely related to *E. revelata* (see below) but the two species are easily distinguished both as herbarium specimens and in the field, even from a distance. The mature crown of opposite, sessile, silvery grey, pruinose juvenile foliage of *E. mooreana* is not unique among Kimberley eucalypts; it is also a feature of the variously-related *E. apodophylla* Blakely & Jacobs, *E. ceracea* Brooker & Done and *E. pruinosa*. Of these species, *E. apodophylla* is also a member of *E. ser. Subexsertae*, but is distinguished from *E. mooreana* by its better-formed tree habit, non-connate crown leaves, and globular buds with rounded opercula. *Eucalyptus apodophylla* is restricted to seasonally wet flats and floodplains, with a single population known from a valley within the King Leopold Ranges, most populations occurring further north.

***Eucalyptus revelata*** D.Nicolle & R.L.Barrett, *sp. nov.*

*Typus:* Mount Bell, King Leopold Range, Western Australia [precise locality withheld for conservation reasons], 18 June 1978, *A.S. George* 15149 (*holo:* PERTH 01052861; *iso:* BRI, CANB 15149, K, NSW 304181).

*Illustrations.* G. Chippendale, *Fl. Austral.* 19: 322, Figure 901 (1988), as *E. mooreana*; A.P. Brown *et al.*, *West. Austral. Threat. Fl.* p. 26. (1998), as *E. mooreana*; Slee *et al.*, *EUCLID Eucalypts of Australia* CD ROM, all *Eucalyptus mooreana* images except upper left image (2006).

*Very poorly-formed, scraggy tree or obligate mallee*, 2–4 m tall; lignotuber present (combination resprouter of Nicolle 2006). *Bark* smooth throughout, decorticating annually, white to slightly salmon pink to pale grey. *Branchlets* not or slightly pruinose, lacking pith glands. *Cotyledons* reniform. *Seedling leaves* opposite, sessile, ovate, glabrous, dull, green, not pruinose. *Mature crown* composed entirely of juvenile leaves. *Juvenile leaves* opposite, sessile, ovate to broad-lanceolate, 35–145 mm long, 32–75 mm wide, concolorous, dull, green to blue-green, not pruinose; tertiary venation very dense; oil glands numerous, unconnected to vein network (island oil glands). *Inflorescences* held erect, 7-flowered; peduncles angular in cross section, stout, 8–20 mm long; pedicels absent or to 1 mm long. *Flower buds* diamond-shaped to ovoid, not pruinose, 9–12 mm long, 5–8 mm diam.; hypanthium smooth; operculum smooth, hemispherical to conical. *Flowers* white, staminal filaments irregularly-flexed in bud; ovules in 6 vertical rows on each placenta. *Fruits* cupular, smooth, not pruinose, 4–8 mm long, 5–8 mm diam.; disc  $\pm$  level; valves 3, strongly exerted above rim. *Seeds* dark brown to black, obliquely pyramidal to elongate, 1–2 mm long. (Figure 2)

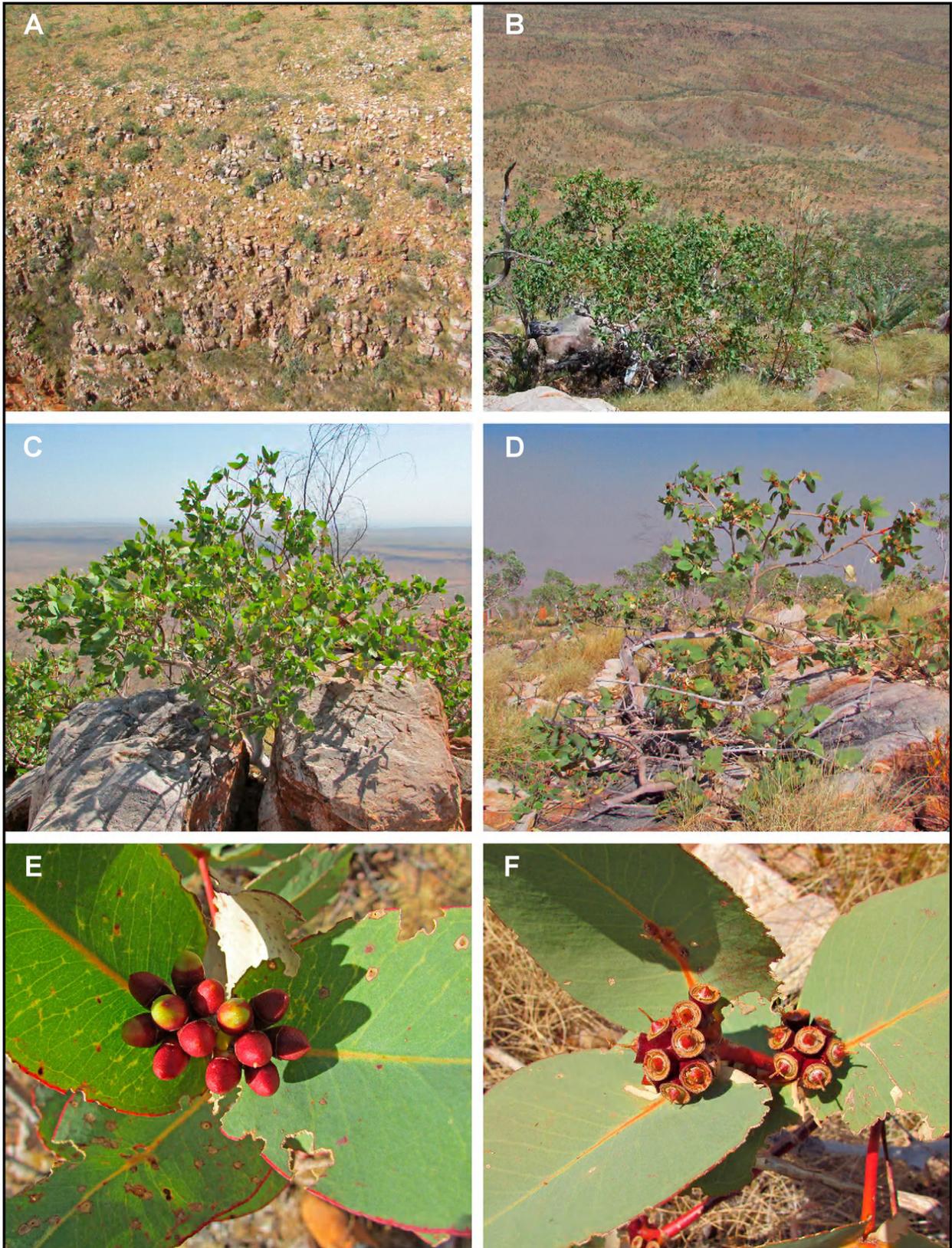


Figure 2. *Eucalyptus revelata*. A – habitat on Bold Bluff; B – habitat and habit on Mt Herbert; C, D – habit of plant on Bold Bluff (note the low sprawling habit (compared to *E. mooreana*) at all sites); E – crown foliage and flower buds; F – crown foliage and immature fruits. Photographs by Tim Willing.

*Diagnostic characters.* *Eucalyptus revelata* is distinguished within *Eucalyptus* ser. *Subexsertae* by its very poorly-formed tree or sprawling mallee habit, its mature crown of opposite, sessile, often connate, non-pruinose juvenile leaves, its 7-flowered inflorescences, and its conical opercula. Characters distinguishing it from *E. mooreana* are its generally lower, more sprawling habit, its less uniformly-coloured bark, its non- or weakly-pruinose branchlets, its non-pruinose buds and fruits, its green to slightly blue-green, non-pruinose leaves, and its generally smaller fruits.

*Specimens examined.* WESTERNAUSTRALIA: [localities obfuscated for conservation reasons] Mt Bell, 28 May 1974, *J.S. Beard* 6964 (NSW, PERTH); Mt Bell, 23 May 1967, *E.M. Bennett* 1888 (PERTH); Mt Broome, [20] May 1905, *W.V. Fitzgerald* 830, *p.p.* (NSW); Mt Bell, 30 July 1984, *S.J. Forbes, L.A.S. Johnson & K. Hill* SJF 2752 (CANB, MEL, PERTH); Bold Bluff, July 1967, *C.H. Gittins* 1440 (NSW, PERTH); Mt Bell, 23 May 1967, *J.R. Maconochie* 224 (CANB); Mt Bell, 13 Oct. 1996, *D. Nicolle* 1910 (PERTH); Bold Bluff, 5 June 2006, *T. Sinclair & T. Willing* 10 (CANB, PERTH); Mt Bell, 1 Oct. 2003, *A.V. Slee* 4583 (CANB, MEL, PERTH); cultivated at Canberra (ex *Slee* 4583), 6 Apr. 2004, *A.V. Slee s.n.* (CANB 644786); Bold Bluff, 23 Sep. 2014, *T. Sonneman & T. Willing* 1 (PERTH); Bold Bluff, 23 Sep. 2014, *T. Sonneman & T. Willing* 2 (PERTH); Bold Bluff, 23 Sep. 2014, *T. Sonneman & T. Willing* 3 (PERTH); Bold Bluff, 23 Sep. 2014, *T. Sonneman & T. Willing* 4 (PERTH); Mt Broome, 23 Sep. 2014, *T. Sonneman & T. Willing* 5 (PERTH); Mt Broome, 23 Sep. 2014, *T. Sonneman & T. Willing* 6 (PERTH); Mt Broome, 23 Sep. 2014, *T. Sonneman & T. Willing* 7 (PERTH); Mt Herbert, 23 Sep. 2014, *T. Sonneman & T. Willing* 11 (PERTH); Mt Herbert, 23 Sep. 2014, *T. Sonneman & T. Willing* 12 (PERTH); Gibb River Rd, 5 Sep. 2006, *L.S.J. Sweedman* 7001 (KPBG, PERTH).

*Distribution and habitat.* Restricted to a localised part of the western King Leopold Ranges in the Kimberley region of Western Australia. The species has been collected from only a handful of sites, from Mt Vincent in the north-west to Mt Broome in the south-east, over a linear range of less than 30 km. It grows on cliffs and steep rocky slopes, and less commonly on the ridges, of the higher sandstone hills and mountains in the ranges, often in quartzite outcrops. Within populations it grows as scattered plants in very open, low woodland or shrubland with *Corymbia cadophora* subsp. *cadophora* and *C. collina*, over a *Triodia* ground storey.

*Conservation status.* To be listed as Priority Two under the Conservation Codes for Western Australian Flora (A. Jones pers. comm.). *Eucalyptus revelata* was previously included within *E. mooreana*, which is Declared Rare Flora (see above). *Eucalyptus revelata* has been collected from only five mountains, although all occur within the remote King Leopold Ranges Conservation Park, and there may be populations awaiting discovery at other similarly inaccessible sites. Total individual numbers are not known. Although the species is long-lived and fire tolerant, it could still be vulnerable due to its restricted occurrence.

*Etymology.* The epithet is from the Latin *revelatus* (unveil, lay bare), referring to the absence of white wax covering on the branchlets, leaves, flower buds and fruits, which distinguishes the species from *E. mooreana*.

*Notes.* We have considered, but rejected, environmental variables as a cause for the morphological distinction between the two variants of *E. mooreana* s. lat. (*E. mooreana* s. str. and *E. revelata*). In particular, the response to wildfire and the associated age and vigour of resultant new vegetative growth was considered as a possible explanation for the differences in pruinosity and leaf colour between the two variants; however, we were able to eliminate this as a reason for the morphological differences by examining photographs of both variants at various post-fire regrowth stages, even on single mountain ridges.

Specific recognition of this taxon is considered appropriate, as the distribution of *E. mooreana* and *E. revelata* is not a simple geographical replacement pattern, and hybrids and intergrades between the two have not been recorded. Although the two species do not usually grow in mixed stands, their overall distributions mostly overlap, and both variants do occur on some mountains, such as on Mt Bell, where the two species grow on slopes with different aspects, and also on Mt Broome. The specimen label for *S.J. Forbes et al.* SJF 2752 indicates a probable mixed population ('variably glaucous or non glaucous within population') on Mt Bell.

### Acknowledgements

We are indebted to Tracy Sonneman (District Nature Conservation Coordinator for the West Kimberley District at DBCA) for bringing the two variants of *E. mooreana* to our attention. We also thank Tim Willing (Broome) and Tracy Sonneman for their recent collections and the in-situ photography of two variants of *E. mooreana* from a number of remote sites.

### References

- Briggs, J.D. & Leigh, J.H. (1996). *Rare or threatened Australian plants*. 1995 revised edn. (CSIRO Publishing: Collingwood, Victoria.)
- Brooker, M.I.H. (2000). A new classification of the genus *Eucalyptus* L'Hér. (Myrtaceae). *Australian Systematic Botany* 13: 79–148.
- Brooker, M.I.H. & Kleinig, D.A. (1994). Field guide to eucalypts. Vol. 3. Northern Australia. 1<sup>st</sup> edn (Inkata Press: Sydney.)
- Brooker, M.I.H. & Kleinig, D.A. (2004). Field guide to eucalypts. Vol. 3. Northern Australia. 2<sup>nd</sup> edn (Bloomings Books: Melbourne.)
- Brooker, M.I.H. & Nicolle, D. (2013). *Atlas of leaf venation and oil gland patterns in the eucalypts*. (CSIRO Publishing: Collingwood.)
- Brown, A.P., Thomson-Dans, C. & Marchant, N.G. (1998). *Western Australia's threatened flora*. (Department of Conservation and Land Management: Perth.)
- Chippendale, G.M. (1988). *Eucalyptus, Angophora*. In: A.S. George (ed) *Flora of Australia. Volume 19, Myrtaceae - Eucalyptus, Angophora*. (Australian Government Publishing Service, Canberra.)
- Fitzgerald, W.V. (1905). *W.V. Fitzgerald's diary of the Kimberley Trigonometrical Expedition, April 5 to October 25, 1905*. (Unpublished, Battye Library, Perth.)
- Fitzgerald, W.V. (1906). Some species of West Kimberley plants. *The Western Mail (Perth)* 21(1066) 2 June 1906: 10, 24–25, 28.
- Fitzgerald, W.V. (1918). The botany of the Kimberleys, north-west Australia. *Journal and Proceedings of the Royal Society of Western Australia* 3: 102–224.
- Gardner, C.A. (1979). *Eucalypts of Western Australia*. (Western Australian Department of Agriculture: Perth.)
- Hopper, S.D., van Leeuwen, S., Brown, A.J. & Patrick, S. (1990). *Western Australia's endangered flora*. (Department of Conservation and Land Management: Perth.)
- Maiden, J.H. (1914). Notes on *Eucalyptus* (with descriptions of new species) No. 2. *Journal and Proceedings of the Royal Society of New South Wales* 47: 217–235.
- Maiden, J.H. (1920). *A critical revision of the genus Eucalyptus*. Vol. 5, Part 43. (Government Printer: Sydney.)
- Nicolle, D. (2006). A classification and census of regenerative strategies in the eucalypts (*Angophora*, *Corymbia* and *Eucalyptus* - Myrtaceae) with special reference to the obligate seeders. *Australian Journal of Botany* 54(4): 391–407.
- Nicolle, D. (2015). Classification of the eucalypts (*Angophora*, *Corymbia* and *Eucalyptus*) Version 2. <http://www.dn.com.au/Classification-Of-The-Eucalypts.pdf> [Online, accessed 15 April 2017].
- Rye, B.L. (1992). Myrtaceae. In: Wheeler, J.R. (ed.) *Flora of the Kimberley region*. pp. 499–546. (Department of Conservation and Land Management: Perth.)
- Slee, A.V., Connors, J., Brooker, M.I.H., Duffy, S.M. & West, J.G. (2006). *EUCLID Eucalypts of Australia*. CD ROM. Centre for Plant Biodiversity Research. (CSIRO Publishing: Melbourne.)
- Smith, M. (2018). *Threatened and Priority Flora list 16 January 2018*. Department of Biodiversity, Conservation and Attractions. <https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants> [accessed 24 January 2018].



Nicolle, D and Barrett, Russell L. 2018. "Eucalyptus revelata, a rare new species related to *E. mooreana* (Myrtaceae) from the Kimberley region of Western Australia." *Nuytsia: journal of the Western Australian Herbarium* 29, 109–118. <https://doi.org/10.58828/nuy00873>.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/282441>

**DOI:** <https://doi.org/10.58828/nuy00873>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/306890>

#### **Holding Institution**

Western Australian Herbarium

#### **Sponsored by**

Atlas of Living Australia

#### **Copyright & Reuse**

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Western Australian Herbarium

License: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

Rights: <http://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.