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Formal recognition of *Eucalyptus platydisca* (Myrtaceae), an arid-zone monocalypt from south-western Australia

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Abstract

Nicolle, D. & Brooker, M.I.H. Formal recognition of *Eucalyptus platydisca* (Myrtaceae), an arid-zone monocalypt from south-western Australia. *Nuytsia* 16(1): 87–94 (2006). The new species *Eucalyptus platydisca* is formally described, the species having been long recognised as a distinct taxon under the manuscript name *E. platydisca* and under various phrase names including the common name Jimberlana mallee. The new species is known from just two populations near Norseman in Western Australia and is included in Western Australia's Schedule of Declared Rare (Endangered) Flora. The new species is closely related to, but readily distinguishable from, *E. diversifolia*, differing in the narrower juvenile leaves, the consistently 7-flowered inflorescences, the longer, conical to horn-shaped operculum, the broader fruits with a consistently broad disc and the granite hill habitat. *Eucalyptus platydisca* is probably a relictual species and occurs in the lowest rainfall environment of any monocalypt (*Eucalyptus* subgenus *Eucalyptus*). The new species is part of *E.* subser. *Neuropterae*, and a key for the subseries is presented.

Introduction

The monocalypts (*Eucalyptus* subg. *Eucalyptus*) are a predominantly eastern Australian group of mostly trees from relatively mesic environments. The monocalypts are characterised within the eucalypts by their combination of reniform cotyledons, lack of pith glands, simple and axillary inflorescences, asepalous flower buds, single opercula and ovules in 2 (rarely 4 in a few species) vertical rows.

Within the monocalypts, *Eucalyptus* sect. *Longistylus* and the monotypic *E.* sect. *Pedaria* (*E. brevistylis* Brooker) are the only taxa to occur west of Kangaroo Island in Australia, the former section also including most of the mallee species within the monocalypts. All species of *E.* sect. *Longistylus* except *E. diversifolia* are endemic to the south-western Australia – *E. diversifolia* spans the south coast of the continent from near Toolinna in Western Australia eastwards to Cape Nelson in Victoria.

The new species described in this paper is part of *Eucalyptus* ser. *Diversiformae* Blakely subser. *Neuropterae* (Maiden) Brooker distinguished by its erect-held, seven or more flowered axillary inflorescences, smooth fruit and brown seeds. We recognise 24 terminal taxa within *E.* ser. *Diversiformae*, of which half have been described since 1972 and six of which are included in Western Australia's Schedule of Declared Rare (Endangered) Flora (*E. coronata*, *E. dolorosa*, *E. johnsoniana*, *E. lateritica*, *E. platydisca* and *E. suberea*). The subseries has a number of apparently relictual taxa restricted to

isolated hills and ranges such as the lateritic hills of Mt Lesueur and surrounds (four endemics – *E. johnsoniana*, *E. lateritica*, *E. pendens* and *E. suberea*), the Stirling Range (two endemics – *E. erectifolia* and *E. ligulata* subsp. *stirlingica*), the hills of Fitzgerald River National Park (two endemics – *E. coronata* and *E. sepulcralis*) and the granite domes of Mt Le Grand, Cape Arid and the Recherche Archipelago (two endemics – *E. aquilina* and *E. ligulata* subsp. *ligulata*).

Taxonomy

Eucalyptus subser. **Neuropterae** (Maiden) Brooker. *Aust. Syst. Bot.* 13: 131 (2000).

Type: Eucalyptus todtiana F. Muell.

Eucalyptus subser. *Neuropterae* is a subseries of eight taxa distributed mainly in coastal and subcoastal southern Western Australia and extending eastwards along coastal areas through South Australia to Cape Nelson in western Victoria.

Eucalyptus diversifolia and *E. platydisca* can be distinguished within *E.* subser. *Neuropterae* by the smaller and non-flanged or barely flanged seeds (Figure 1). The smaller seeds in these two species compared to the remainder of *E.* subser. *Neuropterae* are notably independent of fruit size, as several species in the subseries (such as *E. erectifolia* Brooker & Hopper and *E. pachyloma* Benth.) have comparable fruit size to *E. platydisca* and larger-fruited variants of *E. diversifolia*, but have significantly larger seeds.

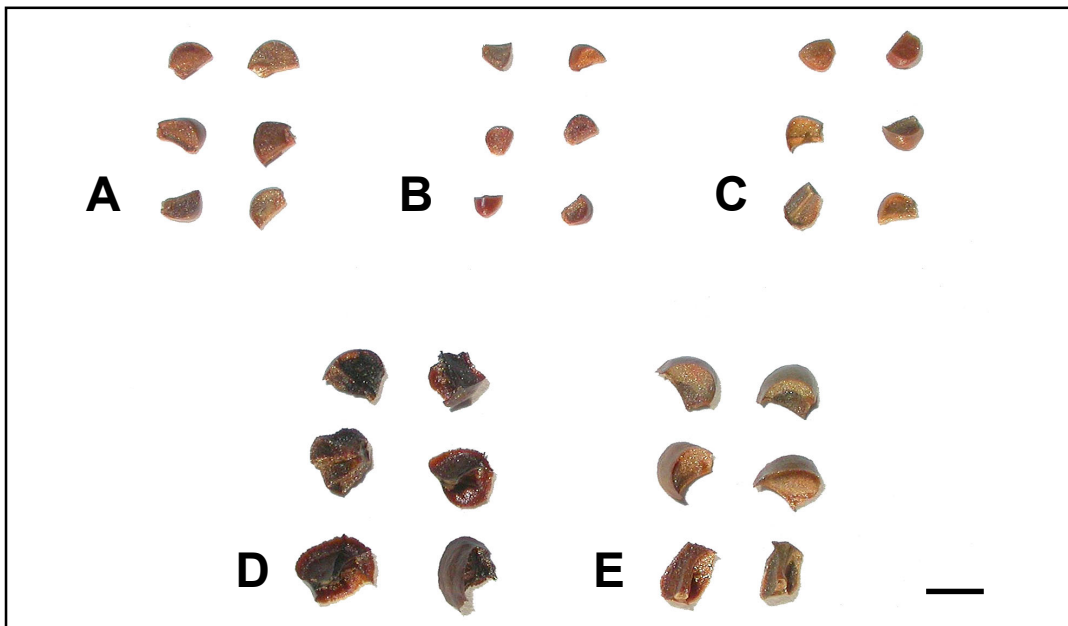


Figure 1. Seeds. A – *E. platydisca* (D. Nicolle 133, north side of Mount Norcott, north-east of Norseman, WA); B – *E. diversifolia* subsp. *hesperia* (D. Nicolle 1811, east of Border Village, Great Australian Bight, SA); C – *E. diversifolia* subsp. *diversifolia* (D. Nicolle 1991, Cape Nelson, south of Portland, Vic.); D – *E. johnsoniana* (D. Nicolle 3547 & M. French, south of Eneabba, WA); E – *E. pachyloma* (D. Nicolle 224, south-east of Stirling Range, WA). Scale bar = 3 mm.

Key to taxa of *Eucalyptus* subser. *Neuropterae*

1. Bark rough and fibrous over most of stems
 2. Adult leaves without visible oil glands **E. todtiana**
 2. Adult leaves with numerous visible oil glands **E. lateritica**
1. Bark smooth throughout or mostly smooth
 3. Fruit globose, with non-prominent and descending disc **E. johnsoniana**
 3. Fruits obconical to cupular, often with prominent disc
 4. Opercula >1.5 times as long as hypanthia, conical to beaked **E. platydisca**
 4. Opercula <1.5 times as long as hypanthia, hemispherical to conical
 5. Seeds distinctly flanged, >3 mm long; south-west WA only
 6. Fruits cupular, disc level to descending or annular **E. erectifolia**
 6. Fruits obconical, disc prominent, ascending **E. pachyloma**
 5. Seeds not or barely flanged, <3 mm long; eastwards from Nullarbor cliffs
 7. Fruits to 8 mm long, to 12 mm wide, disc level **E. diversifolia** subsp. **hesperia**
 7. Fruits >8 mm long, >10 mm wide, disc level to ascending **E. diversifolia** subsp. **diversifolia**

Eucalyptus platydisca Nicolle & Brooker ex L.A.S. Johnson & K. Hill, *sp. nov.*

Typus: Jemberlana Hill, NW of Norseman, Western Australia, 8 April 1983, *M.I.H. Brooker* 8064 (*holo*: CANB00431938; *iso*: MEL 1614358, PERTH01046225).

A *E. diversifolia* foliis juvenilibus angustioribus, inflorescentiis constanter 7-floribus, operculis conicis vel cornutis longioribus, fructibus disco constanter latiore, et habitatione non calcarea differt.

Differs from *E. diversifolia* in the narrower juvenile leaves, the consistently 7-flowered inflorescences, the longer, conical to horn-shaped operculum, the broader fruits with a consistently broad disc and the granite hill habitat.

Mallee 2–5 m tall, lignotuber present. *Bark* smooth throughout, decorticating in strips and short ribbons, grey over cream. *Juvenile leaves* sessile, opposite for *c.* 10 pairs; lamina discolourous, dull, blue–green, lanceolate, 60–80 mm long × 18–30 mm wide. Branchlets non-pruinose, pith glands absent. *Adult leaves* petiolate, disjunct, held erect; lamina concolorous, dull, slightly blue–green, narrow-lanceolate to lanceolate, often falcate, 70–115 mm long × 8–18 mm wide; vein reticulation moderate; oil glands scattered, intersectional and island. *Inflorescences* axillary, unbranched, held erect, 7-flowered; peduncles terete to angular, 6–13 mm long; pedicels terete to angular, 2–6 mm long. Flower buds pedicellate, diamond-shaped, 10–17 mm long × 6–10 mm wide, no median scar; opercula long-conical to beaked, usually slightly constricted at halfway point, 1.5–2 times as long as hypanthia. *Flowers* white; stamens variously flexed, all fertile; anthers versatile, oblong, opening by longitudinal slits. *Fruits* very shortly pedicellate, broadly obconical to cupular to slightly campanulate, 8–14 mm long × 12–16.5 mm wide; disc level to slightly ascending or somewhat annular, broad, 2–5 mm wide; valves 4 or 5, at rim level or slightly exerted. *Seeds* brown, 2–3 mm long, with an indistinct reticulum. (Figure 2)

Selected specimens examined: WESTERN AUSTRALIA: Stony hill 3 miles E of Norseman, 2 Feb. 1935, *C.A. Gardner s.n.* (CANB, PERTH); Granite hills, 5 miles E of Norseman, 8 Nov. 1953, *C.A. Gardner* 11178

(CANB, MEL); 6 miles [9.5 km] E of Norseman on Eyre Hwy, 7 Nov. 1962, *M.E. Phillips s.n.* (CANB); 3.5 miles E of Norseman, 23 Mar. 1968, *G.M. Chippendale* 383, 384 (AD, CANB, PERTH); 10 miles E of Norseman, Apr. 1969, *B.A. Rockel s.n.* (CANB); 4 miles NE of Norseman, 14 Feb. 1970, *M.I.H. Brooker* 2487 (CANB); 0.2 miles (R) of Eyre Hwy, 4.2 miles E of Norseman, at foot of Mt Jemaluna [*sic*], 13 Nov. 1970, *J.P. Baker* 55 (CANB); C. 4 miles NE Norseman, 26 Apr. 1972, *M.I.H. Brooker* 3644 (CANB); Jimberlana Hill, 28 July 1978, *C.D. Boomsma* 355 (AD, NSW); Coolgardie District: Jimberlana Hill, 7 km NNE of Norseman, 1 Feb. 1979, *M.D. Crisp* 5636, 5637 (CANB, PERTH); Jimberlana Hill, 28 Apr. 1982, *M.I.H. Brooker* 7488 (CANB, PERTH); Jimberlana Hill, 7.5 km NE of Norseman, 200 m S of Eyre Hwy, 8 Apr. 1983, *S.D. Hopper* 2736 (CANB, PERTH); Jimberlana Hill, 10 July 1983, *S.D. Hopper* 2936 (PERTH); North side of Mount Norcott, NE of Norseman, 32°07'06"S, 122°00'31"E, 6 Dec. 1992, *D. Nicolle* 133 (AD); Summit of Jimberlana Hill, 5.9 km NE of Norseman, 16 Apr. 1995, *T.R. Lally & B.J. Lepschi* 541 (AD, CANB, PERTH); Jimbylanica [Jimberlana] Hill on Eyre Hwy, 15 Aug. 1995, *R.J. Cranfield* 10007 (CANB, PERTH); Mt Norcott, 4.7 km S of the Eyre Hwy; track turnoff is 29.5 km E of the Norseman Post Office along the Eyre Hwy, 30 Apr. 2000, *B. Archer* 1573 (CANB, MEL, PERTH); Jimberlana Hill, 20 Oct. 2001, *M.D. Crisp* 9401 (CANB).

Distribution and habitat: Known from two granite hills in the Dundas Hills north-east of Norseman in Western Australia, viz: Jimberlana Hill and Mount Norcott, where the species grows in loam between granite boulders and scree (Figure 3). The species is the dominant plant on the slopes of both of these hills, forming a very open mallee shrubland with a *Triodia*-dominated understorey. At the lower footslopes of Jimberlana Hill, *E. platydisca* may be associated with *E. longissima* Nicolle and/or *E. planipes* L.A.S. Johnson & K.D. Hill.

Conservation status: Approximately 200 individuals occur on Jimberlana Hill (Kelly *et al.* 1995), which is accessible by its proximity adjacent to the Eyre Highway and close to the township of Norseman. The population on the relatively inaccessible Mt Norcott appears to be larger, although an estimate of individual numbers has not been attempted. The species has been allocated the conservation code 2V (vulnerable) by Briggs & Leigh (1996). Conservation Codes for Western Australian Flora: Rare.

It is possible, but unlikely, that further populations remain undiscovered, as both the new species and its habitat are distinctive and a past recent search for the new species on hills of similar elevation to the north of Mt Norcott (Nicolle and French, July 2001) was unsuccessful.

Etymology: The specific name is derived from the Greek *platys* (broad; level) and *discus* (disc; a circular plate), referring to the broad and prominent fruit disc.

Notes: This species has long been recognized as a distinct taxon, although without formal status, both under the manuscript name *E. platydisca* (Briggs & Leigh 1996) and under various phrase names, including '*E. sp. C*' (Brooker & Kleinig 1990), '*E. sp. C aff. diversifolia*' (Kelly *et al.* 1995) and '*E. sp. Norseman (S.D. Hopper 2936)*' (Western Australian Herbarium 2006).

Eucalyptus platydisca is probably a relictual species due to the withdrawal of the moisture-loving subgenus *Eucalyptus* to the wetter south and west. Its very restricted distribution is disjunct from all other monocalypt taxa due to its habitat in an arid environment, where effective rainfall is increased by runoff due to rock cover, slope and crevices. The species occurs in the lowest rainfall environment of any monocalypt. The species is morphologically closest to *E. diversifolia*, particularly subsp. *hesperia*, which occurs at its closest over 250 km to the east above the Baxter Cliffs on the edge of the Nullarbor. *Eucalyptus diversifolia* subsp. *hesperia* is somewhat intermediate in morphology between *E. platydisca* and typical *E. diversifolia* (and occurs in between geographically) and shares with the new species its



Figure 2. Holotype of *Eucalyptus platydisca* (M.I.H. Brooker 8064 – CANB 00431938).

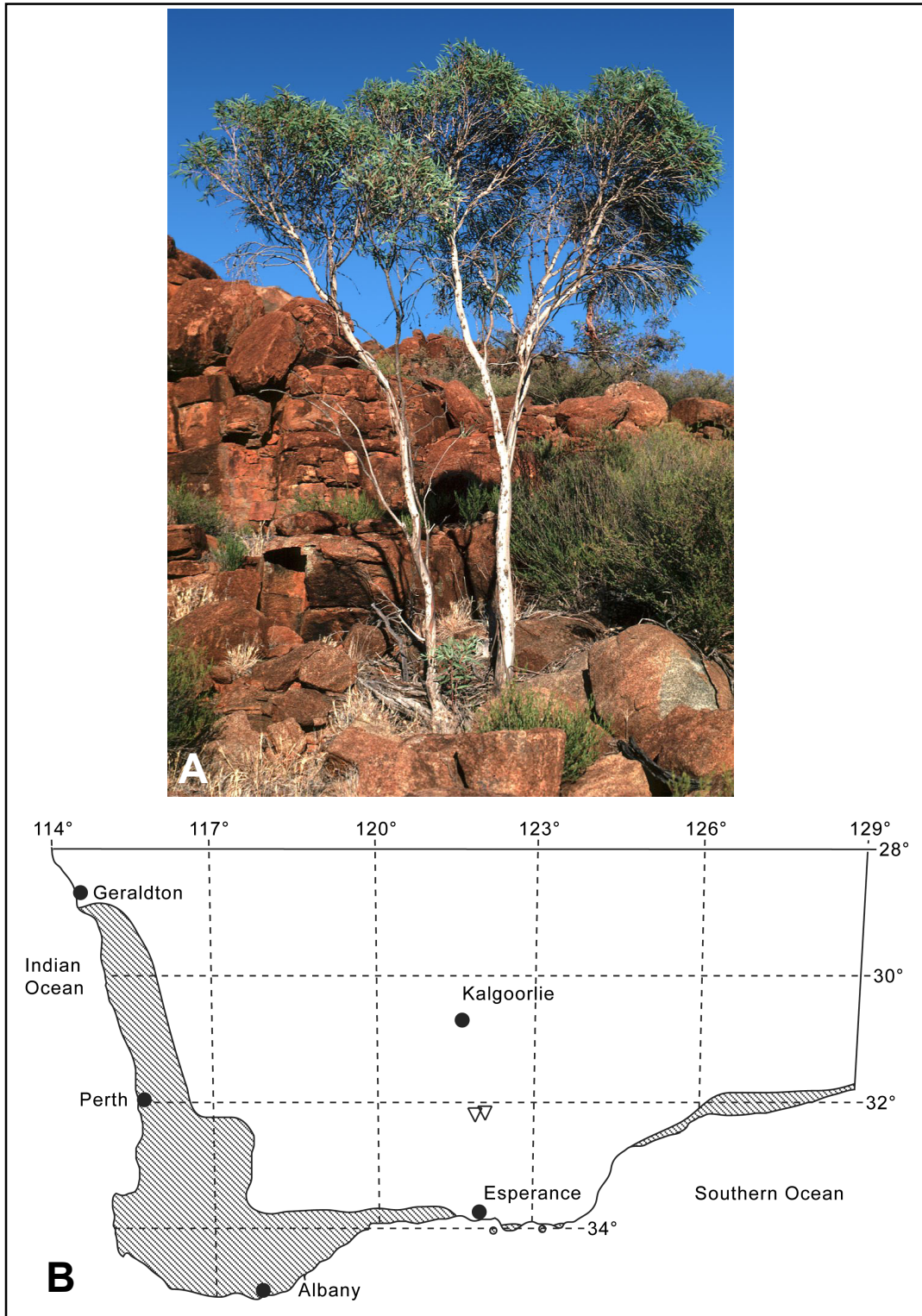


Figure 3. A – *Eucalyptus platydisca* at Jimberlana Hill, WA; B – map of Western Australia below 28°S, showing the distribution of *E. platydisca* (▽) and all other Western Australian monocalypts (shaded areas).



Figure 4. Mature flower buds and year old fruits. A – *E. platydisca* (top row; F1 of D. Nicolle 133, north side of Mount Norcott, north-east of Norseman, WA); B – *E. diversifolia* subsp. *hesperia* (bottom row; F1 of D. Nicolle 1811, east of Border Village, Great Australian Bight, SA). Scale bar = 10 mm.

narrower juvenile leaves, pointier opercula and a more consistently level fruit disc (none of which are as pronounced as in the new species) compared to typical *E. diversifolia*.

Eucalyptus platydisca differs from *E. diversifolia* subsp. *hesperia* in the narrower juvenile leaves (narrowly ovate in *E. diversifolia* subsp. *hesperia*), the consistently 7-flowered inflorescences (to 15-flowered in *E. diversifolia* subsp. *hesperia*), the longer buds with a long-conical to beaked operculum (buds to 11 mm long and with a conical operculum and generally equal in length to hypanthium in *E. diversifolia* subsp. *hesperia*) and the broader fruits (to 10 mm wide in *E. diversifolia* subsp. *hesperia*) (Figure 4).

Eucalyptus platydisca differs from *E. diversifolia* subsp. *diversifolia* in the narrower juvenile leaves (ovate to elliptical in *E. diversifolia* subsp. *diversifolia*), the consistently 7-flowered inflorescences (to 15-flowered in *E. diversifolia* subsp. *diversifolia*), the buds with a long-conical to beaked operculum (buds with a rounded to conical operculum and generally equal in length to hypanthium in *E. diversifolia* subsp. *diversifolia*) and the generally broader fruits (to 14 mm wide in *E. diversifolia* subsp. *diversifolia*).

The habitat of *E. platydisca* also differs from *E. diversifolia*, being more arid and occurring on granite hills (mainly coastal and on aeolian soils overlying limestone in *E. diversifolia*).

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