

A new geographically disjunct and apparently rare subspecies of *Eucalyptus jutsonii* (Myrtaceae) from Western Australia

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Abstract

Nicolle, D. & French, M.E. A new geographically disjunct and apparently rare subspecies of *Eucalyptus jutsonii* (Myrtaceae) from Western Australia. *Nuytsia* 17: 281–288 (2007). The newly discovered subspecies *E. jutsonii* Maiden subsp. *kobela* D.Nicolle & M.E.French is described, differing from the typical subspecies in the narrower adult leaves, the generally more slender flower buds with a more pointed operculum and the slightly smaller fruits. The new subspecies is disjunct from the typical subspecies by over 400 kilometres and is known from a single site spanning approximately five kilometres. *Eucalyptus jutsonii* subsp. *kobela* may be under threat from mining-related activity and the subspecies meets the criteria for listing as Priority One under the Conservation Codes for Western Australian Flora. A key to *E. ser. Micrantherae* is included.

Introduction

The new taxon described here was first brought to our attention in 2002, as a result of specimens collected from Lochada Station by Mr Pat Ryan of the Department of Environment and Conservation (DEC; formerly Department of Conservation and Land Management) in Geraldton. Initial field examination of the populations from Lochada and adjacent Karara Stations (east of Morawa) by the authors in 2002 indicated that they were similar to typical *Eucalyptus jutsonii* Maiden, but were distinct from other populations of that species (which are well-known in the Goongarrie area, about 400 km to the east) due to the conspicuous needle-like foliage. Subsequent field and herbarium studies indicated that the Lochada/Karara populations were sufficiently distinct to warrant taxonomic recognition, and that the new taxon may be under threat from future mining activities in the area. Seedlings grown from field-collected seed confirmed the affinity of the Lochada/Karara populations to *E. jutsonii*, with both having similar seedling morphology, and also indicated that the populations are fertile and produce non-segregating seedlots, so are not likely to be hybrids. Taxonomic recognition of the two variants of *E. jutsonii* is considered appropriate due to the morphological distinction between the two geographically disjunct variants. Subspecific recognition of the two variants is considered most appropriate due to the relatively minor morphological differences between the two variants. This is consistent with subspecific recognition within other *Eucalyptus* L'Hér. species where leaf shape or size is the primary or only distinguishing character.

The recent discovery of this new taxon is partly due to its apparent natural rarity, in combination with the inconspicuous nature of the plants in the field, which resemble some *Acacia* Sm. or *Melaleuca* L. species, the former with which it is associated.

Eucalyptus jutsonii belongs to *E. ser. Micrantherae* Benth, which is distinguished within the genus by the combination of the following characteristics (amended from Brooker 2000):

E. subg. Symphyomyrtus (Schauer) Brooker – Cotyledons folded in seeds; buds bi-operculate; seeds with ventral or terminal hilum; seed coat formed from both integuments.

E. sect. Bisectae Maiden ex Brooker – Cotyledons bisected; inflorescences axillary.

E. subsect. Destitutae Brooker – Pith of branchlets without glands.

E. ser. Micrantherae – Mallees; leaf venation closely pinnate; oil glands numerous & intersectional; roof of ovary 3-lobed.

Six taxa are here recognized in *E. ser. Micrantherae*. The series has a very widespread but scattered distribution from Shark Bay on the west coast of Western Australia, eastwards through central Australia to south-eastern Queensland and northern New South Wales.

Brooker (2000) recognized two subseries within *E. ser. Micrantherae*, viz. the monotypic *E. subser. Micrantherae* Brooker (*E. micranthera* F.Muell. ex Benth.) and *E. subser. Bakerianae* (Chippendale) Brooker, containing the other five taxa. Brooker (2000) distinguishes the monotypic *E. subser. Micrantherae* from *E. subser. Bakerianae* on the basis of unique characters present in *E. micranthera*, namely the smooth bark (rough bark in *E. subser. Bakerianae*), the broader adult leaves (generally narrower in *E. subser. Bakerianae*) and the presence of the essential oil 4-methyl-2-pentyl acetate (MPA) in the adult leaves (MPA absent in the leaves of *E. subser. Bakerianae*).

Key to the taxa of *Eucalyptus ser. Micrantherae*

1. Bark smooth throughout **E. micranthera**
- 1: Bark rough on lower stem
 2. Umbellasters 7–13-flowered; fruit 4–5 mm wide; Qld, NSW **E. bakeri**
 - 2: Umbellasters 7–9(–11)-flowered; fruit 5–9 mm wide; WA, SA, NT
 3. Adult leaves lanceolate, 8–20 mm wide
 4. Adult leaves dull and bluish at first, maturing glossy and green **E. mannensis** subsp. **mannensis**
 - 4: Adult leaves glossy and green at all stages **E. mannensis** subsp. **vespertina**
 - 3: Adult leaves linear, 1–7 mm wide
 5. Adult leaves 3–6(–7) mm wide; fruits 4–8 mm long **E. jutsonii** subsp. **jutsonii**
 - 5: Adult leaves 1.2–2.5(–3) mm wide; fruits 3–5 mm long **E. jutsonii** subsp. **kobela**

Taxonomy

Eucalyptus jutsonii Maiden, *J. & Proc. Roy. Soc. New South Wales* 53: 61 (1919). *Type*: Comet Vale, Western Australia, December 1916, *J.T. Jutson* 216 (*holo*: NSW; *iso*: CANB, MEL).

Mallee 4–7 m tall; lignotuber present; lignotuber sprouter. *Bark* rough over lower stems (up to branches 30–100 mm diam.), moderately coarsely fissured, stringy, grey to light grey-brown. *Branchlets* lacking pith glands. *Seedling leaves* sessile, elliptical at first but soon becoming linear, to 110 mm long, to 12 mm wide, slightly discolorous, dull to slightly glossy, blue-green to green. *Adult*

leaves held conspicuously erect with petiole tapering indistinctly to lamina; lamina linear, 75–150 mm long, 1.2–7 mm wide, glossy, dark green; vein reticulation dense; oil glands dense, intersectional. *Inflorescences* axillary, unbranched, 7(–9)-flowered; peduncles terete to angular, 2–9 mm long; pedicels terete to angular, 1–3 mm long. *Flower buds* 7–11 mm long, 2.5–4 mm wide; hypanthia cupular; opercula bluntly conical to sharply conical to slightly beaked, 4–7.5 mm long. *Flowers* white; stamens variously flexed in bud; anthers all fertile. *Ovules* in 4 vertical rows. *Fruits* cupular, 3–8 mm long, 5–9 mm wide; disc thick, level to slightly descending; valves 3, slightly exserted. *Seeds* brown to grey-brown, compressed-ovoid, with fine reticulation.

The species is most closely related to the much more widespread *E. mannensis* Boomsma, which occurs from Shark Bay (Western Australia) eastwards to near Alice Springs (Northern Territory) and the Everard Ranges (South Australia), differing from the latter most notably in the narrower and linear adult leaves. The flower buds of *E. jutsonii* also tend to be longer and with more sharply pointed opercula compared to *E. mannensis*.

Two geographically disjunct subspecies are recognised in *E. jutsonii*, differing most conspicuously in the adult leaf width and also in flower bud morphology and fruit size.

Eucalyptus jutsonii* Maiden subsp. *jutsonii

Mallee 4–7 m tall. *Bark* rough over most of stems (down to branches 30–100 mm diam.), grey to light grey-brown. *Seedling leaves* to 120 mm long, to 7 mm wide, dull to slightly glossy, blue-green to green. *Adult leaves* 80–125 mm long, 3–6(–7) mm wide. *Inflorescences* 7(–9)-flowered; peduncles 2–9 mm long; pedicels 1–3 mm long. *Flower buds* 7–10 mm long, 2.5–4 mm wide; opercula bluntly to sharply conical, 4–6(–7.5) mm long. *Fruits* 4–8 mm long, 5–9 mm wide.

Selected specimens examined. WESTERNAUSTRALIA: [localities withheld for conservation purposes] 12 Feb. 1970, M.I.H. Brooker 2455 (CANB, PERTH); 6 May 1987, M.I.H. Brooker 9616 (CANB, PERTH); 24 Jul. 1999, J.R. Connors 1055 & D. Nicolle (CANB, PERTH); 16 Jun. 1988, R.J. Cranfield 7020 (PERTH); 26 Sep. 1999, M. French 1012 (PERTH); 17 Sep. 1927, C.A. Gardner 2163 (PERTH); 4 Nov. 1983, K. Hill 541, L. Johnson, D. Blaxell & M.I.H. Brooker (NSW, PERTH); 6 Oct. 1993, D. Nicolle 548 (PERTH); 27 Jul. 1999, D. Nicolle 2778 & J.R. Connors (CANB, PERTH).

Distribution and habitat. Distributed north of Kalgoorlie in Western Australia, where it is known to occur over a maximum linear range of c. 100 km, from Comet Vale in the west, eastwards to near Binti Binti Rocks (Kelly *et al.* 1995; Figure 1). The subspecies grows in open mallee scrub in red to pale orange deep sands, often in undulating topography and on dunes. Associated eucalypts include *E. concinna* Maiden & Blakely, *E. ebbanoensis* Maiden subsp. *glaucircamula* K.D.Hill & L.A.S.Johnson, *E. leptopoda* Benth. subsp. *subluta* L.A.S.Johnson & K.D.Hill, *E. moderata* L.A.S. Johnson & K.D.Hill, *E. oldfieldii* F.Muell. and *E. rigidula* Maiden *s. lat.*

Conservation status. Not widespread but relatively common throughout its distribution, which is in a relatively remote region. Recorded from Goongarrie National Park. DEC Conservation Codes for Western Australian Flora: Priority Two (Atkins 2006).

Notes. Distinguished from the new subspecies described below in the broader (but still linear) adult leaves. The flower buds also tend to be fatter and with a less pointed (but still conical) operculum, and the fruits slightly larger.

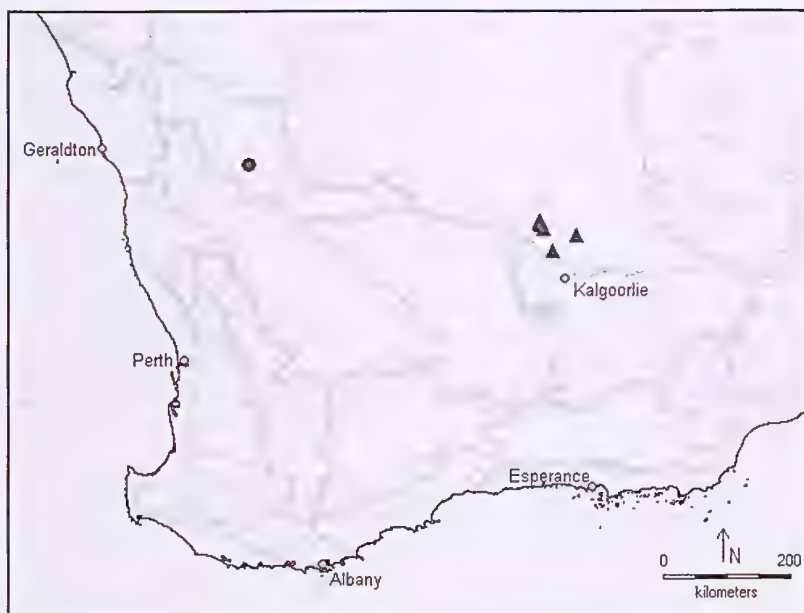


Figure 1. Distribution of *Eucalyptus jutsonii* subsp. *jutsonii* (▲) and subsp. *kobela* (●) in south-west Western Australia.

Chippendale (1988) describes *E. jutsonii* as occurring near Cundelee and cited a specimen from north-west [sic – actually north-east] of Cundelee (*M.I.H. Brooker* 2621). This specimen is here considered to represent *E. mannensis* subsp. *mannensis* which is known to be scattered in the Cundelee area (Hill & Johnson 1992). The authors of this paper do not know of any confirmed records of *E. jutsonii* from the Cundelee area.

***Eucalyptus jutsonii* subsp. *kobela* D.Nicolle & M.E.French, subsp. nov.**

A subspecies typica foliis adultis constanter angustioribus, alabastris leviter tenuioribus operculo acutiore et fructibus leviter minoribus differt.

Typus: Karara Station [sic - actually Lochada Station], north-east of Perenjori, Western Australia [precise locality withheld for conservation purposes], 28 May 2006, *M.E. French* 1794 (*holo*: PERTH 07376626; *iso*: AD, CANB).

Mallee 4–6 m tall. *Bark* rough over most of stems (down to branches 30 mm diam.), grey. *Seedling leaves* to 110 mm long, to 4 mm wide, dull, blue-green. *Adult leaves* 75–150 mm long, 1.2–2.5(–3) mm wide. *Inflorescences* 7-flowered; peduncles 2.5–3.5 mm long; pedicels 1–2 mm long. *Flower buds* 7.5–11 mm long, 2.5–3 mm wide; opercula long-conical to slightly beaked, 5–6 mm long. *Fruits* 3–5 mm long, 5–6 mm wide. (Figures 2, 3)

Selected specimens examined. WESTERNAUSTRALIA: [localities withheld] 3 Aug. 2002, *D. Nicolle* 4448 & *M. French* (AD, CANB, PERTH,); 3 Aug. 2002, *D. Nicolle* 4449 & *M. French* (CANB, PERTH); 2 Jun. 2002, *P. Ryan s.n.* (PERTH).



Figure 2. Holotype of *Eucalyptus jutsonii* subsp. *kobela* (M. French 1794) [Lat. and Long. masked]. Scale = 5 cm.



Figure 3. Habit and habitat of *Eucalyptus jutsonii* subsp. *kobela* (Lochada Station, NE of Perenjori, D. Nicolle 4448 & M. French).

Distribution and habitat. *Eucalyptus jutsonii* subsp. *kobela* is known only from Lochada and Karara Stations, about 70 km east of Morawa in Western Australia (Figure 1). It is known from two subpopulations approximately five kilometres apart, with an estimated 50 individuals scattered over approximately one kilometre at the northern subpopulation (within Lochada Station) and only a handful of scattered individuals known at the southern subpopulation (within Karara Station).

At both sites the subspecies grows on very broad and subdued rises high in the landscape in deep yellow to orange sand. The vegetation is *Acacia*-dominated shrubland, with scattered associated eucalypts including *Eucalyptus kochii* Maiden & Blakely subsp. *amaryssia* D.Nicolle, *E. leptopoda* subsp. *arctata* L.A.S.Johnson & K.D.Hill and *E. loxophleba* Benth. subsp. *supralaevis* L.A.S.Johnson & K.D.Hill.

Conservation status. The subspecies is known from a single locality spanning approximately five kilometres in an area undergoing active mining exploration and development. Further survey is required to establish the number of individuals present and the extent of the known subpopulations. The subspecies is not conserved and may be under threat from mining-related activity such as roadway construction and overburden storage. Recently listed as Priority One under DEC Conservation Codes for Western Australian Flora.

Phenology. Poorly known. Likely to be associated with heavy rainfall events.

Etymology. From the Greek *kobele* (needle), referring to the needle-like adult leaves of the subspecies.

Notes. The two subspecies are distinguished most readily by adult leaf width, but there are also evident differences in flower bud morphology and fruit size, although bud shape and fruit size between the two subspecies slightly overlap. Subspecific recognition of *E. jutsonii* subsp. *kobela* is consistent with the relatively minor (albeit conspicuous) morphological distinction of the subspecies, and the slight overlap in bud shape and fruit size between the two variants.

The new subspecies is highly disjunct from the typical subspecies, with the nearest populations of the latter occurring over 400 km to the east-south-east and centred in the Goongarrie area.

Eucalyptus jutsonii subsp. *kobela* is distinctive in its extremely narrow and needle-like adult leaves, which are on average half the width of adult leaves in subsp. *jutsonii*. Along with *E. angustissima* F.Muell. (*E. ser. Angustissimae* Brooker) and *E. perangusta* Brooker s. str. (*E. ser. Porantherae* Benth.), the adult leaves of *E. jutsonii* subsp. *kobela* are probably the narrowest in the genus. Despite the distinctiveness of the subspecies for a eucalypt, due to its erect, needle-like leaves, plants are inconspicuous in the field due to the superficial resemblance of the crown to that of some *Acacia* or *Melaleuca* species (Figure 3).

A single individual of the putative hybrid *E. jutsonii* subsp. *kobela* × *E. kochii* subsp. *amaryssia* is known, growing with both the putative parental taxa (Karara Station [actually Lochada Station], NE of Perenjori, 26 May 2006, M. French 1795; PERTH).

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