Eucalyptus arcana (Myrtaceae), a new combination for a former subspecies of *Eucalyptus splendens* and notes on a population of scentbark occurring near Moonlight Head in south-west Victoria

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Abstract

Eucalyptus splendens subsp. *arcana* Nicolle & Brooker is raised to species level as *E. arcana* (Nicolle & Brooker) Rule comb. etstat.nov; and a small population of scentbarks occurring near Moonlight Head in south-west Victoria are confirmed as a variable form of *E. aromaphila*.

Muelleria 27(2): 230-232 (2009)

Introduction

An occurrence on basaltic soils to the north-west of Portland, Victoria, of small, rough-barked trees was brought to my attention by the eminent surveyor and collector of Victorian plants, Cliff Beauglehole. These trees, known locally as Apple Jack, were subsequently described (Rule 1996) as *Eucalyptus splendens* Rule. A population of related, depauperate trees and mallees occurring at Carpenter Rocks in lower south-east South Australia was informally treated by Nicolle (1997) in his circumscription of eucalypts of that state. Nicolle and Brooker (1998) subsequently erected *E. splendens* subsp. *arcana* Nicolle & Brooker to accommodate the Carpenter Rocks population. Further studies have indicated that *E. splendens* subsp. *arcana* is sufficiently distinct to warrant it being recognised as a separate species.

Eucalyptus arcana **(Nicolle & Brooker) Rule** *comb. et stat. nov.*

Eucalyptus splendens subsp. *arcana* Nicolle.& Brooker, *J. Adelaide Bot. Gard.* 18(2): 103 (1998).

Type: South Australia. South-eastern Region: East of Carpenter Rocks township, 26.ii.1997, *D. Nicolle 1978* (holotype: AD; isotype: CANB, NSW, MEL, BRI, HO, K).

Illustration: Nicolle and Brooker (1998) p. 105 (as *E. splendens* subsp. *arcana*).

Distribution and habitat: *Eucalyptus arcana* occurs on shallow, impoverished soils over a limestone substrate about a kilometre to the east and north-east of the coastal town of Carpenter Rocks, lower south-east South Australia.

Associated species: *E. obliqua* L'Her. is an associate and *E. ovata* Labill. occurs nearby.

Conservation status: I concur with the conservation status of 2Vcit which was recommended by Nicolle and Brooker in accordance with Briggs and Leigh (1996).

Affinities: *Eucalyptus splendens* was regarded by Rule (1996) as having affinities with the scentbarks, series *Acaciiformes*, a small group of rough-barked trees with 7-flowered inflorescences, on the basis of its bark, juvenile leaves, buds and fruits being similar to other species of that series. Brooker and Slee (1996) in *Flora of Victoria*, however, tentatively placed the species with the manna gums, series *Viminales*. Nicolle and Brooker (1998), in providing their treatment of *E. splendens* subsp. *arcana*, maintained the view that the affinities of E. *splendens* and the new subspecies are with the manna gums. However, they further noted that the boundaries between the manna gums and the scentbarks are not clearly defined and that a better understanding of the relationship between the groups would be a matter for further research. Nicolle (2006), having apparently reassessed the affinities of the two subspecies of *E. splendens*, reassigned them to the scentbarks.

The current study has assessed the Carpenter Rocks entity as a separate species and, on the basis of seedling morphology and ontogeny, determined that the two taxa in question form a discrete complex with links closer to the scentbarks than the manna gums. Whilst each scentbark species has its individual juvenile leaf shape, with the range of shapes across the species including linear-elliptical and falcate, elliptical, ovate-elliptical or ovate-lanceolate, all species have basally tapered and non-amplexicaul, dull juvenile leaves which become petiolate and disjunct relatively early in the juvenile stage. In the manna gums the juvenile leaves are lanceolate, basally rounded or amplexicaul and lustrous (except for a recently discovered unnamed form which has glaucous juvenile leaves) and remain sessile and opposite for numerous pairs. By comparison, the juvenile leaves of the *E. splendens* complex fit neither combination, being lanceolate, ovate-lanceolate, ovate or broadly ovate, basally tapered and lustrous, and becoming shortly petiolate and disjunct in the juvenile stage at a similar rate to the scentbarks. At this stage, it is viewed here that the relationships of the *E. splendens* complex

Table 1: Comparisons between *Eucalyptus splendens* and *E. arcana* in addition to those of Nicolle & Brooker (1998).

Characters	*E. splendens*	*E. arcana*
Trunks	stout, erect, to 0.75 m diam. at the base	slender, usually leaning, to 0.2 m diam. at the base
Bark	grey-brown, thick, sub-fibrous, deeply fractured	light grey, thin, scaly or tessellated, slightly fibrous at the base
Canopies	foliage relatively dense in appearance, consisting of lanceolate, semi-pendulous leaves	foliage relatively sparse in appearance, consisting of haphazardly oriented, lanceolate and broadly lanceolate leaves
Seedling stems	square in cross-section and winged throughout the juvenile stage	only square in cross-section in early seedling development
Juvenile leaves		
shape	lanceolate, rarely ovate-lanceolate	ovate or broadly ovate
apex	acuminate	apiculate
Adult leaves		
size	10–20 cm long, 1–2.2 cm wide	8–12 cm long, 1–3.5 cm wide
lateral veins	25–35° from mid-vein	35–45° from mid-vein
intramarginal veins	1–2 mm from margin	2–3 mm from margin
Peduncles	6–10 mm long, 1.5–2 mm thick	3–5 mm long, 2–2.5 mm thick
Fruits		
shape	ovoid or sub-globular (5–6 mm long, 4–6 mm diam.)	hemispherical or obconical (5–6 mm long, 6–8 mm diam.)
disc	moderately to steeply ascending	rolled

are unresolved. Ideally, further research, which has a molecular rather than a morphological focus, offers the best prospects for their resolution.

Notes: Nicolle and Brooker (1998, p. 106), in justifying their decision to erect the Carpenter Rocks entity as a subspecies within *E. splendens*, noted that "*E. splendens* subsp. *arcana* differs from *E. splendens* subsp. *splendens* in its consistently low, scraggy habit; the larger, slightly crenulate juvenile leaves; the larger, sessile buds and fruits and the obtuse operculum. Site differences are also apparent with *E. splendens* subsp. *splendens* occurring on much deeper, non-calcareous soils further inland from the coast". However, the authors did not address other differences between the two that indicate they are sufficiently distinct to warrant them being regarded as separate species. Thus, the Carpenter Rocks taxon is here elevated to the rank of species and comparisons other than those offered by Nicolle and Brooker are outlined in Table 1.

Notes on a population of scentbarks occurring near Moonlight Head in south-west Victoria

Nicolle (2006) identified a small population of about 50 plants occurring along Wreck Beach Track near Moonlight Head in south-west Victoria as *Eucalyptus splendens* subsp. *arcana* (here recognised as *E. arcana*). In his descriptions and comments Nicolle noted that this population had been regarded as *E. aromaphloia* L.D.Pryor & J.H.Willis by Chappill *et al*. (1986) in their study of the *E. aromaphloia* complex. In reporting the results of their seedlings trials, Chappill *et al.* (1986) indicated that their Moonlight Head seedlots produced seedlings that were consistent with typical *E. aromaphloia*. From field studies of plants along the Wreck Beach Track and on the hillside above Wreck Beach I became convinced that the population is not *E. arcana* but a variable, depauperate form of *E. aromaphloia,* which superficially resembles that species. In particular, the population shows slight variation in leaf size, operculum shape and fruit size. Such variation is not uncommon in populations of typical *E. aromaphloia*. To confirm this assessment, comparative seedling trials were conducted using four seedlots of trees of typical *E. arcana* and four of trees typical of the Moonlight Head population occurring along Wreck Beach Track. Four or five seedlings representing each seedlot were selected to be grown on to an advanced seedling stage, the purpose of which was to determine conclusively the identity of the Moonlight Head trees. Additional trials were conducted using the same format with seedlots of three more trees from the Moonlight Head population. Not only were the seedlings across all seedlots of the Moonlight Head trees uniform in their morphology, they exhibited the glaucous growth tips and the ovate-elliptical, bluish juvenile leaves that characterise *E. aromaphloia*.

Acknowledgements

Neville Bonney of Millicent is thanked for permitting access to his property at Carpenter Rocks to examine plants of *Eucalyptus arcana* and to collect seedlots for seedling trials. David Boomsma of Mount Gambier is also thanked for his assistance with the project, as is Neville Walsh of the National Herbarium of Victoria for his advice regarding aspects of the study and with particular details of the manuscript. Special thanks are given to David Robbins, Chris Jenek and Jeremy Prentice of the nursery of the Royal Botanic Gardens Melbourne, for facilitating and conducting some of the seedling trials associated with this study.

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