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EUCALYPTUS SPLENDENS SUBSP. *ARCANA* (MYRTACEAE) AN ENDANGERED NEW SUBSPECIES ENDEMIC TO SOUTH AUSTRALIA

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Abstract

E. splendens Rule subsp. ***arcana*** Nicolle & Brooker, a new subspecies from south of Millicent in South Australia is described. It differs from *E. splendens* subsp. *splendens* in its consistently low, scraggy habit; larger, slightly crenulate juvenile leaves; larger, sessile buds and fruits and the obtuse operculum. *E. splendens* subsp. *arcana* is endangered, with a very restricted natural occurrence.

Introduction

This new taxon was first brought to our attention by Neville Bonney of Millicent, on whose property the only known populations of *E. splendens* subsp. *arcana* occur. The taxon was first seen by one of us (M.I.H.B.) in January 1986, but subsequent collections and field survey have not followed until relatively recently. The plants have some superficial resemblance to *E. viminalis* subsp. *cygnetensis* Boomsma, however, the morphology of juvenile leaves and buds indicate a relationship to *E. aromaphloia* and related taxa, including *E. splendens*. The new subspecies is of very restricted natural distribution and despite repeated searches for more populations, none has been found.

Eucalyptus splendens Rule subsp. **arcana** Nicolle & Brooker, *subsp. nov.*

Eucalypto splendenti affinis a qua habitu depauperato, foliis juvenilibus majoribus ellipticis integris vel leviter crenulatis; alabastris sessilibus ovoideis operculo obtuso hypanthio aequali vel breviore; fructibus majoribus sessilibus et habitatione calcarea differt.

Typus: SOUTH AUSTRALIA: South-eastern Region: East of Carpenter Rocks township, 26 February 1997, *D. Nicolle 1978* (holo: AD; iso: CANB, NSW, MEL, BRI, HO, K) Fig. 1).

Low scraggy *tree*, sometimes several-stemmed, 2–6 metres tall. Rough bark persistent to 30–80 mm diameter branchlets, rough, fibrous and moderately deeply longitudinally fissured on larger stems, grey to grey-brown; bark thinner, flaky and breaking into shallow longitudinal fissures on smaller stems, sometimes conspicuously tessellated, light grey over red-brown, then smooth above, grey over cream, decorticating in ribbons. Lignotubers present. Pith glands absent. *Cotyledons* bilobed; seedling leaves opposite for 4–12 pairs then alternating, sessile for > 12 pairs, broad-lanceolate, 45–112 mm long by 10–55 mm wide, green, glossy, discolorous. Juvenile stems square in transverse section. All structures non-pruinose. *Adult leaves* alternating, petiolate, lanceolate, sometimes falcate, 80–120 mm long, 12–35 mm wide, concolorous, slightly glossy to glossy, light green to green; reticulation moderate to dense, with numerous, small, mostly island oil glands, lateral veins at 35° to 45° from midrib. *Inflorescences* axillary, unbranched, 7-flowered, peduncles flattened to angular, 3–5 mm long; buds sessile or pedicels to 1 mm long on centre bud. *Mature buds* obovoid to pyriform, 5–7.5 mm long, 3–5.5 mm wide; hypanthium cupular to obconical, smooth; outer operculum scar present; operculum maturing obtuse to bluntly conical, rounded at tip, equal in width to hypanthium and equal in length to or shorter than hypanthium, smooth. *Stamens* inflexed, all fertile; anthers versatile, oblong, opening by longitudinal slits. *Flowers* white. *Ovules* in four vertical rows. *Fruits* sessile, hemispherical

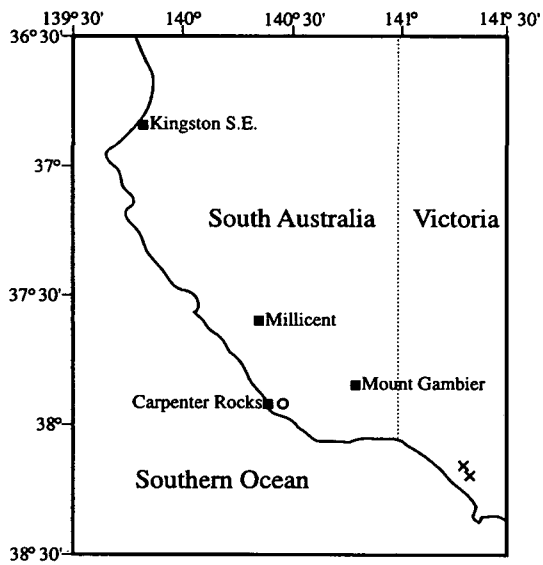
to slightly obconical, 6–7 mm long, 6–8 mm wide, smooth; inner operculum scar inconspicuous, ascending, merging with disc; disc ascending to almost level, to 1 mm wide; valves 3 or 4, broadly triangular, exserted above rim level. *Seed* compressed-ovoid, 1.8–2.5 mm long, dull to slightly glossy, dark brown to almost black, reticulum on dorsal side fine; chaff red-brown.

Selected specimens

SOUTH AUSTRALIA: South-eastern Region: near Carpenter Rocks, 31.i.1986, *I. Brooker 9155* (CANB); Carpenter Rocks vicinity, 30.vii.1996, *I. Brooker 12568 & D. Nicolle* (AD, CANB, NSW, MEL, BRI); Carpenter Rocks vicinity, 30.vii.1996, *I. Brooker 12569 & D. Nicolle* (CANB); Carpenter Rocks vicinity, 30.vii.1996, *I. Brooker 12566 & D. Nicolle* (AD, CANB, NSW, MEL, BRI); East of Carpenter Rocks township, 30.vii.1996, *D. Nicolle 1800 & I. Brooker* (AD, CANB, NSW); North-east of Carpenter Rocks township, 26.ii.1997, *D. Nicolle 1979* (AD, CANB).

Distribution and habitat

E. splendens subsp. *arcana* is endemic to South Australia, known from only a single population spreading over a total distance of less than a kilometre, to the north-east and east of the township of Carpenter Rocks, south of Millicent in the State's far south-east (Fig. 2). The populations all occur within a kilometre of the ocean in dense tall shrubland dominated by *Acacia longifolia* var. *sophorae*. *E. splendens* subsp. *arcana* occurs in locally heavier soils, usually red clay-loam with outcropping limestone boulders on low limestone rises associated as well with *E. obliqua, Acacia myrtifolia, Melaleuca lanceolata* and *Grevillea aquifolium*. Stunted *E. obliqua* occurs more commonly on lighter soils surrounding the *E. splendens* subsp. *arcana* populations. *E. ovata* grows nearby but not within the *E. splendens* subsp. *arcana* population.



Distribution of *E. splendens* subspp. *arcana* (o) and *splendens* (x).

Map 1. Distribution of ***E. splendens*** subspp. ***arcana*** (o) and ***splendens*** (x).

Etymology

From the Latin *arcanus* – mysterious and secret, referring to this species being hidden in the dense scrub in an otherwise mostly cleared area.

Flowering period

Poorly known. In February 1997, most plants were in mature bud with some plants beginning to flower.

Fig. 1. ***E. splendens*** subsp. ***arcana*** (D. Nicolle 1978). **A,** mature branch (×0.7); **B & C,** adult leaves (×0.7); **D,** inflorescence (×3); **E,** bud - side view (×3); **F,** bud - longitudinal section (×3); **G,** flower (×3); **H,** style (×7); **I,** stamens (×5.5); **J,** fruits (×1.5); **K–N,** fruit (×2.5); **O,** seeds (×10).

Notes and affinities

The new taxon is clearly a member of the large extracodical *E.* section *Maidenaria* Pryor and Johnson (1971). Within the section, it is superficially similar to *E. viminalis* subsp. *cygnetensis,* but the short, obtuse operculum in the mature bud and the sessile buds and fruits distinguish *E. splendens* subsp. *arcana* populations, on deeper sandier soils to the north.

Juvenile leaf and mature bud morphology suggest a relationship with *E.* ser. *Acaciiformes* Brooker & Slee. *E. splendens* appears to be the taxon linking the *E. aromaphloia* complex (*E.* ser. *Acaciiformes*) which consists of *E. aromaphloia sens. lat., E. fulgens, E. ignorabilis, E. corticosa, E. acaciiformis* and *E. nicholii* with the *E. viminalis* complex (*E.* ser. *Viminales* Blakely) which consists of many species including *E. viminalis* (with subspp. *cygnetensis*, *viminalis* and *pryoriana*). While *E. splendens* has characteristics common to both series and occupies a taxonomic position between the two series, it would be nonsensical to erect a further series to accommodate them. The morphological boundaries between the *E.* ser. *Acaciiformes* and *Viminales* are not clear and further studies may show that they would be more accurately classified as two subseries of *E.* ser. *Viminales.*

E. splendens subsp. *splendens*, a Victorian endemic, is restricted to the Mt. Richmond area between Nelson and Portland in the south-west of the State. *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. The two subspecies are geographically separated by about 100 km, however this may be partly an artefact due to large scale land clearing earlier this century.

The new subspecies has been grown in cultivation for many years as "mallee manna gum" (N. Bonney, pers. comm.).

Conservation status

All the known plants of *E. splendens* subsp. *arcana* grow in an area under a Heritage Agreement and the owner is aware of the species occurrence and vulnerability. Most plants are relatively inaccessible and these plants should be at no short term risk. It is unlikely that more populations will be found in the area as most of the area has been cleared for farmland and pine plantations, and a search in what little natural vegetation remains has resulted in the discovery of no new populations. It is remotely possible that it may be found further away in similar coastal areas. The conservation code 2VCit is recommended using the criteria of Briggs and Leigh (1996).

Acknowledgments

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