

## TWO NEW SPECIES OF *EUCALYPTUS* (MYRTACEAE) IN SOUTH-EASTERN AUSTRALIA

by

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### ABSTRACT

Rule, K. Two new species of *Eucalyptus* (Myrtaceae) in south-eastern Australia. *Muelleria* 7(4): 497–505 (1992). — *Eucalyptus strzeleckii* K. Rule *sp. nov.* is described and its distribution given. Comments on its ecology and conservation status are also included and comparisons are made with *Eucalyptus ovata* Labill. and *Eucalyptus brookeriana* Gray, the species with which it has affinities. The new combination, *Eucalyptus petiolaris* (Boland) K. Rule, is published for *Eucalyptus leucoxyton* F. Muell. ssp. *petiolaris* Boland. A description of the taxon is given and aspects of its morphology are discussed.

### INTRODUCTION

*Eucalyptus strzeleckii* K. Rule is a medium to tall, forest swamp gum which grows in the western part of the Strzelecki Ranges of Victoria's South-west Gippsland region. Previous research regarded this eucalypt as an ecotype of *Eucalyptus ovata* Labill. which favors higher altitudes, whilst local observers have referred to it as *Eucalyptus brookeriana* Gray. The erection of *Eucalyptus brookeriana* in 1976 as a Tasmanian endemic species generated considerable interest in the taxonomic status of various Southern Victorian populations of forest swamp gum which resembled *Eucalyptus brookeriana*, including those of the Strzelecki Ranges. Clucas and Ladiges (1979), Ladiges, Gray & Brooker (1981) and Brooker & Lassak (1981) subsequently confirmed the presence of *Eucalyptus brookeriana* in the Otway Ranges and in the Central Highlands near Daylesford. Of particular interest is the study of Clucas & Ladiges which included a sample population from the Yarragon area on the northern fringe of the Strzelecki Ranges. They concluded that this population was an ecotype of *Eucalyptus ovata* and not *Eucalyptus brookeriana*.

The reassessment presented in this paper was initiated because other forest swamp gums observed in the Strzelecki Ranges displayed features inconsistent with *Eucalyptus ovata*. Such features included a tallish, erect habit, smooth white bark with conspicuous red-brown mottling and waxy growth tips which gave the foliage a bluish tinge. As well, these trees had a different flowering period to trees of typical *Eucalyptus ovata* growing in the same area.

Reassessment is also given to *Eucalyptus leucoxyton* F. Muell. ssp. *petiolaris* Boland whose disjunct populations occur on the Eyre Peninsula of South Australia. Previous studies by Boland (1978) and (1979) and Rule (1991) have highlighted its marked divergence from the other subspecies in both adult and juvenile characters. It is the firm opinion of this author that its current taxonomic status is anomalous and that it should be a separate species.

### TAXONOMY

#### 1. *Eucalyptus strzeleckii* K. Rule *sp. nov.*

*Eucalyptus strzeleckii* sp. nov. *Eucalyptus ovatae* DC. affinis a qua foliis immaturis adultis glaucis, foliis juvenilibus angustioribus glandulosioribus seminitenibus, foliis adultis et alabastris fructibusque parvioribus, cortice laevi, et habitatione altioe in differt; etiam *Eucalyptus*

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*brookerianae* foliis immaturis adultis glaucis, foliis juvenilibus angustioribus distincte petiolaris subcrenatis leviter discoloribus, foliis adultis et alabastris fructibusque parvioribus, et cortice laevi.

**HOLOTYPE:** 100 m from the South Gippsland Highway along the Jumbunna Road, 2.7 km from Bena towards Korumburra, 38°27'S, 145°46'E, 10.xi.1990, K. Rule (MEL 1598217).

*Medium-sized to tall forest trees, to 30 m. Bark smooth throughout, whitish with red-brown mottling, with old decorticated bark sometimes persisting about the base as loose, thin sheets or strips. Saplings and immature trees with a substantial stocking of grey-brown sub-fibrous bark. Seedling leaves ovate to elliptical, decussate, shortly petiolate, slightly impressed. Juvenile leaves lanceolate, broad-lanceolate, elliptical or ovate, alternate, petiolate, slightly impressed, discolorous, sublustrous, green or yellow-green, subcrenulate, glandular, apiculate or acute, to 8 × 3 cm. Lateral and intramarginal veins visible. Stems usually square in cross-section by the 8th node, markedly glandular. Petioles to 12 mm long. Intermediate leaves broad-lanceolate, ovate or elliptical, slightly discolorous, glossy, green, to 14 × 6 cm, persisting in the canopy. Growth tips lightly to conspicuously waxy. Adult leaves lanceolate, broad-lanceolate, ovate-lanceolate or ovate, concolorous, glossy, dark green, markedly glandular, usually undulate, apiculate or acuminate, to 15 × 3 cm. Petioles to 3 cm. Intramarginal veins to 3 mm from the margin. Spring growth-tips lightly or conspicuously waxy. Inflorescences simple, axillary, 7-flowered. Buds slightly ovoid or diamond-shaped, distinctly pedicellate, to 8 × 4 mm. Operculum slightly longer than hypanthium, shortly beaked. Hypanthium slightly cupular or obconical. Peduncles round in cross-section or slightly angled, to 14 mm long. Stamens inflexed, all fertile. Filaments white. Anthers versatile, with longitudinal pores. Style to 5 mm long with blunted, lobed stigma. Fruits obconical, pedicellate, constricted below the rim, 4–5 × 5–6 mm. Disc prominent, raised, convex, to 1.5 mm wide. Valves slightly enclosed or level with rim. Pedicels approximately as long as fruit. Peduncles slender, slightly angled, to 14 mm long. Fertile seeds cuneate to rhomboid, black, slightly reticulate, to 1.2 × 1 mm, dorsal surface flat or slightly lacunose. Hilum ventral. (Figure 1)*

#### FLOWERING TIME:

Spring.

#### SPECIMENS EXAMINED:

Victoria — Near Tarrago River, Longwarry District, 38°05'S, 145°52'E, 11.iii.1929, P.R.H. St. John (MEL577100); 6 km WSW of Mirboo North P.O., on Berrys Creek, 38°25'S, 146°05'E, 12.ii.1988, J. Beasley, (MEL220622); Above the railway cutting on the South Gippsland Highway, Bena, 38°25'S, 145°45'E, 10.xi.1990, K. Rule (MEL); Lardners Track, 5 km S of the Princes Highway, Drouin, 38°11'S, 145°03'E, 23.i.1991, D.R. Grant (MEL); 0.5 km along Sunny Creek Road from the Princes Highway, Trafalgar, 38°13'S, 146°09'E, 2.iii.1991, K. Rule (MEL); 4.5 km W of Strzelecki towards Poowong, 38°22'S, 145°52'E, 8.v.1991, K. Rule (MEL); 5 km E of Foster on the South Gippsland Highway, 38°39'S, 146°14'E, 10.v.1991, K. Rule & D. McMahon (MEL); Approx. 1 km S of Stoney Creek township, 38°06'S, 146°03'E, 10.v.1991, K. Rule and D. McMahon (MEL); Approx. 1.5 km S of Koonwarra, 38°34'S, 145°57'E, 17.v.1991, B. Hill (MEL); 5.8 km N of Meeniyen, 38°33'S, 146°03'E, 17.v.1991, K. Rule (MEL).

#### DISTRIBUTION:

Most of the populations of *Eucalyptus strzeleckii* occur across the western section of the Strzelecki Ranges, but populations extend to Neerim South north of Warragul. The Strzelecki Ranges are a cretaceous sandstone formation whose highest point is approximately 700 m above sea level. The annual rainfall over much of the area exceeds 1000 mm. The ranges consists mainly of rolling hills which fan out from two central ridges and which are punctuated by relatively deep, well-watered valleys. *Eucalyptus strzeleckii* favors a range of sites including ridges, slopes and along the banks of streams. Its preferred soils are grey, deep,

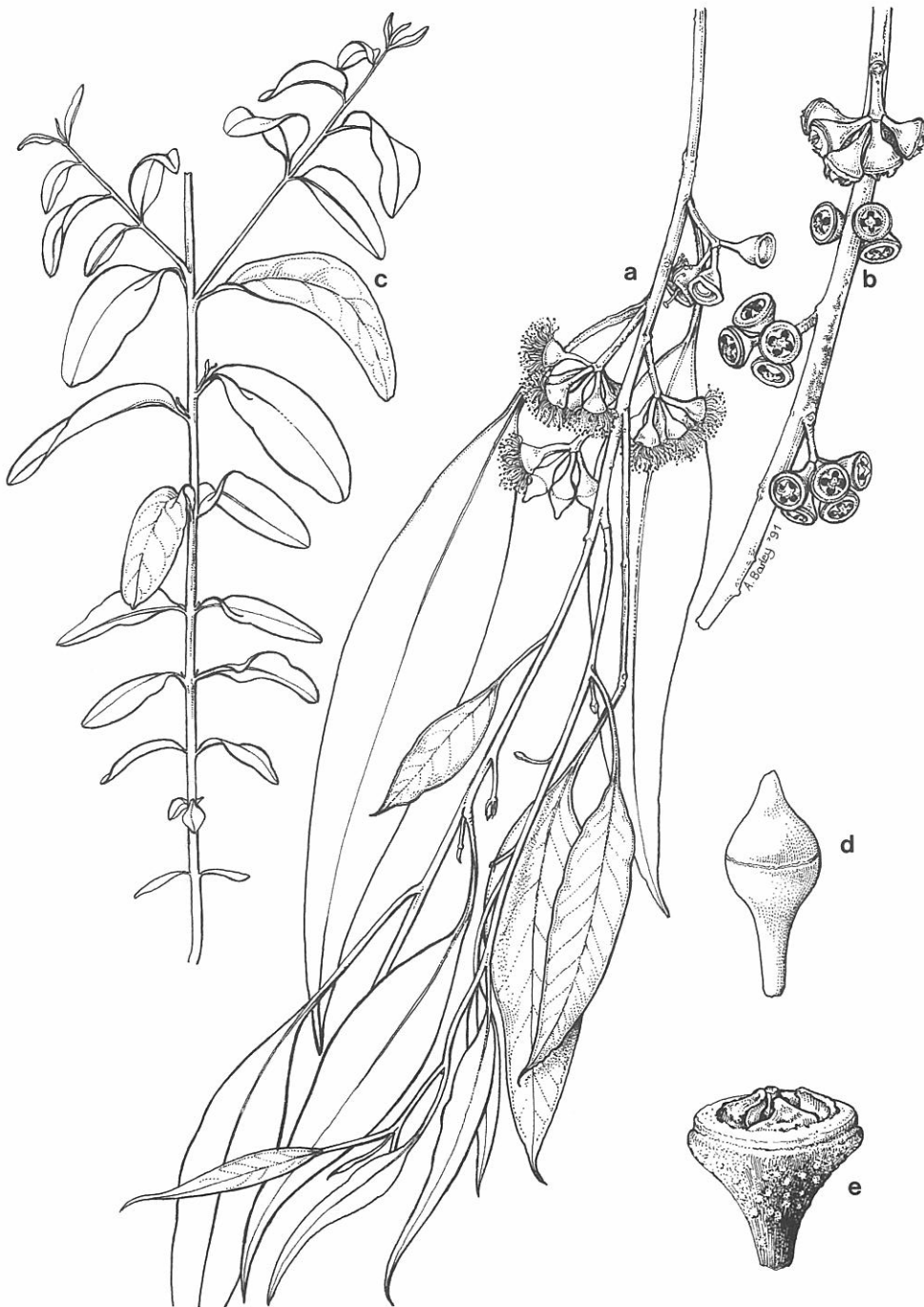


Fig. 1. *Eucalyptus strzeleckii*. a — flowering branchlet  $\times 1$ . b — fruiting branchlet  $\times 1$ . c — seedling  $\times 1/3$ . d — bud  $\times 3$ . e — fruit  $\times 3$ . a, b, d, e drawn from holotype MEL 1598217; c grown from seed collected from holotype MEL 15982216.

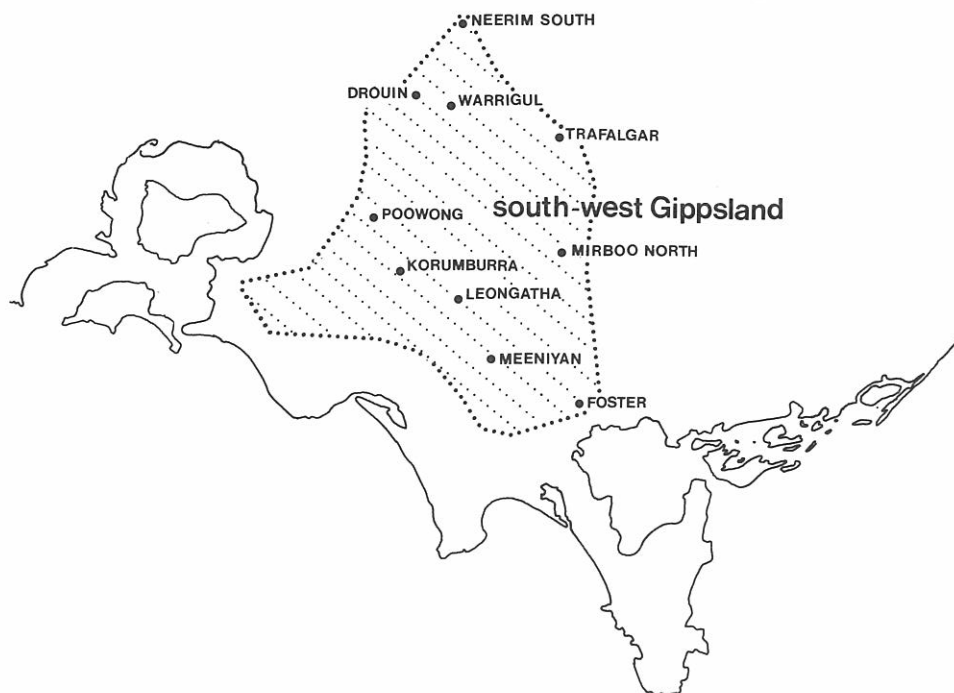


Fig. 2. Known distribution of *Eucalyptus strzeleckii*.

fertile loams which are seasonally water-logged. In a few cases it occurs on undulating or flat terrain close to creeks on the periphery of the ranges. See Figure 2.

#### ASSOCIATED SPECIES:

*Eucalyptus strzeleckii* can be associated with a number of species but more often it grows in small but pure stands. On the more elevated sites *Eucalyptus cypellocarpa* L. Johnson and *Eucalyptus globulus* Labill. are often found nearby, whilst *Eucalyptus radiata* Sieb. ex DC. and *Eucalyptus obliqua* L'Herit. are present where the terrain is undulating and drier. *Eucalyptus viminalis* Labill. is often near by where it occurs along water-courses. Occasionally it abuts *Eucalyptus ovata* on slopes adjacent to poorly drained flats or water-courses. *Eucalyptus regnans* F. Muell. is also nearby, but occupies the wettest and deepest valleys which do not appear to favor *Eucalyptus strzeleckii*.

#### CONSERVATION NOTES:

At the turn of the century the Strzelecki Ranges were heavily timbered, but the demand for farming land brought about the destruction of substantial areas of forest. Despite this, remnants of *Eucalyptus strzeleckii* still occupy farms, roadside verges and small segments of public land and it remains a relatively common and widespread, although sporadic species in South-west Gippsland. In areas such as Korumburra and Poowong only individuals or small groups of trees dot the landscape and remain as monuments to past, apparently extensive populations. As yet, no substantial stands of *Eucalyptus strzeleckii* have been observed on either public or private land.

#### ETYMOLOGY:

The epithet honors Paul Strzelecki, the explorer, who travelled through the region in 1840 and whose name was given to the ranges where the species occurs.

Table 1. Comparisons of *Eucalyptus strzeleckii* with *Eucalyptus ovata* (excluding var. *grandiflora* Blakely)\* and *Eucalyptus brookeriana*.

	<i>Eucalyptus ovata</i>	<i>Eucalyptus strzeleckii</i>	<i>Eucalyptus brookeriana</i>
<b>Habit:</b>	Small to medium-sized spreading trees	Medium-sized to tall erect trees	Small to tall erect trees
<b>Bark:</b>	Smooth with persisting basal plates and chunks	Smooth to the ground or with basal strips and sheets	Smooth with finely fibrous stocking
<b>Seedling stems:</b>			
Oil glands	Moderate	Conspicuous	Conspicuous
Cross-section (6–10th node)	Rounded, slightly angled or square	Square	Square
<b>Juvenile leaves:</b>			
Shape	Ovate to orbicular	Lanceolate to ovate	Orbicular to broad-ovate
Base	Rounded to cuneate	Cuneate	Slightly cordate or rounded
Color (upper surface)	Dull, blue-green	Semi-lustrous, yellow-green or green	Lustrous, green or dark green
Size	17 × 9 cm	To 8 × 4 cm	To 12 × 8 cm
Margin	entire or uneven	Subcrenulate	Crenulate
Discolor	Slight	Slight	Marked
Petiole length (10th node)	To 10 mm	To 12 mm	To 5 mm
Oil glands	Sparse	Abundant	Abundant
<b>Adult leaves:</b>			
Shape	Ovate, broad-lanceolate or broad-ovate	Lanceolate, broad-lanceolate or ovate	Lanceolate, broad-lanceolate or ovate
Size	To 20 × 5 cm	To 15 × 3 cm	To 15 × 3 cm
Margins	Entire	Entire	Entire or subcrenulate
Discolor	Absent	Absent	Absent in Victorian and Western Tas. but present Eastern Tas.
Petiole Length	To 4 cm	To 3 cm	To 3 cm
Oil Glands	Sparse	Abundant	Abundant
<b>Buds:</b>			
Shape	Diamond-shaped	Slightly ovoid to diamond-shaped	Slightly ovoid or diamond-shaped
Size	To 1.2 × 0.6 cm	To 0.8 × 0.4 cm	To 1.2 × 0.5 cm
Operculum	Conical or beaked	Shortly beaked	Conical or shortly beaked
Hypanthium	Obconical or turbinate	Obconical	Obconical or turbinate
Pedicele length	To 10 mm	To 8 mm	To 10 mm
Peduncle length	To 15 mm	To 14 mm	To 12 mm
<b>Fruit:</b>			
Shape	Obconical or turbinate	Obconical	Obconical, turbinate or slightly cupular
Size	5–8 × 5–8 mm	4–5 × 5–6 mm	5–8 × 5–7 mm
Pedicele length	2–5 mm	4–5 mm	2–5 mm
<b>Habitat:</b>	Usually woodland on flat, poorly drained terrain	Usually forest on wet, hilly terrain	Usually forest on wet, hilly terrain
<b>Flowering time:</b>	Autumn	Spring	Summer to Autumn

\* *Eucalyptus ovata* var. *grandiflora* herein is regarded as a separate taxon and its recognition at the formal level of subspecies is anticipated in a future paper.

## DISCUSSION:

*Eucalyptus strzeleckii* possesses dark green, undulating adult leaves and small, somewhat obconical fruits, and can be readily mistaken for other swamp gums, namely *Eucalyptus brookeriana* and *Eucalyptus ovata*. Only through detailed analyses of seedlings and of particular adult characters observed in the field can its distinctness be appreciated. Determinations using dried herbarium materials, however, are fraught with difficulties as *Eucalyptus strzeleckii* overlaps with these species, particularly in bud and fruit sizes. Comparisons of *Eucalyptus strzeleckii* with these other swamp gums are presented in Table 1.

Although *Eucalyptus strzeleckii* is similar to *Eucalyptus brookeriana* in its foliage and habit, other adult characters readily distinguish it from that species. Differences in fruits, buds, adult leaves and bark are subtle but their contributions to the segregation of the species should not go unmentioned. The fruits of *Eucalyptus strzeleckii* are generally smaller and regularly obconical rather than the range of shapes as in *Eucalyptus brookeriana* (turbinate, obconical or subcylindrical). As well, their pedicels are marginally more slender and longer in relation to fruit size, as are their peduncles. Whereas the buds of two are similar in most respects, those of *Eucalyptus strzeleckii* are marginally smaller. The adult leaves of the two species are similar in appearance, but those of *Eucalyptus strzeleckii* are not discoloured or crenulate in the leaf margins as in the typical form of *Eucalyptus brookeriana*. The barks of the two species also show subtle differences. *Eucalyptus strzeleckii* is smooth throughout, except for loose, persisting basal strips and sheets whereas *Eucalyptus brookeriana* regularly possesses a tessellated, finely fibrous stocking on the trunk for one or several metres. However, saplings and immature trees of *Eucalyptus strzeleckii* possess a substantial stocking of light, grey-brown, sub-fibrous bark which could cause confusion regarding identification.

In some respects the juvenile leaves of the two species resemble each other (discussed below) but are readily separable in several features. Those of *Eucalyptus strzeleckii* are only moderately crenulate, sub-lustrous, green or yellow-green, slightly discoloured, longer in the petioles, markedly longer than wide and cuneate in the base. By contrast, those of *Eucalyptus brookeriana* are strongly crenulate, lustrous and green or dark green on the upper surface, markedly discoloured, shortly petiolate, approximately as long as wide and rounded or slightly cordate in the base. The waxy growth tips of *Eucalyptus strzeleckii* are an important feature absent from *Eucalyptus brookeriana*. They occur in intermediate and coppice leaves, as well as on the mature canopy, and are particularly noticeable during spring growth spurts. The feature appears to be rare in seedlings. The amount of bloom varies and may range from being markedly conspicuous to a subtle hint which appears only in spring. Surveys have shown that trees with heavily-waxed growth-tips are most common in the Korumburra-Leongatha area but are a rarity in more northerly populations.

Typically, *Eucalyptus strzeleckii* has a tallish, erect habit and a clean, white and red-brown trunk whilst *Eucalyptus ovata* is small to medium in habit with a greyish upper trunk and substantial amounts of old basal bark retained as large, chunky plates and often appearing fibrous. Occasionally, specimens of *Eucalyptus strzeleckii* carry loose basal bark in excess which resembles the general bark-type of *Eucalyptus ovata*.

Typical seedlings of *Eucalyptus ovata* may be described as featuring a paucity of oil glands, stems often round in section and juvenile leaves that are broad-ovate to orbicular, dull, slightly discoloured, relatively long in the petioles and uneven or entire in the margins. *Eucalyptus strzeleckii* shares some of these features but its seedlings may be distinguished by the regular early development of square stems, the abundance of oil glands, the differences in leaf color and shape and a regular subcrenulation of leaf margins.

Generally the buds of *Eucalyptus ovata* are diamond-shaped with a tapered hypanthium merging into the pedicel. These contrast with the more ovoid ones of *Eucalyptus strzeleckii* which can be readily distinguished from their pedicels.

There is some overlap in fruit sizes, but those of *Eucalyptus ovata* are usually larger. This is particularly evident in those populations which abut *Eucalyptus strzeleckii*. As well, they may be sessile or distinctly pedicellate, unlike the uniformly pedicellate ones of *Eucalyptus strzeleckii*. The peduncles of the two species, although similar in length, are different in that those of *Eucalyptus ovata* are appreciably thicker than those of *Eucalyptus strzeleckii*.

There are also differences in the adult leaves with those of *Eucalyptus ovata* usually being larger, although the persisting, large intermediate leaves, which tend to dominate the canopy of *Eucalyptus strzeleckii*, may give wrong impressions regarding maximum sizes. Further, the adult leaves of *Eucalyptus ovata* are relatively sparse in oil glands and appreciably less aromatic than those of *Eucalyptus strzeleckii*. Above all, the two species are readily distinguished by the waxy growth tips which are present in *Eucalyptus strzeleckii* and not in *Eucalyptus ovata*.

Both *Eucalyptus ovata* and *Eucalyptus strzeleckii* have well-separated flowering periods, implying long-established breeding barriers. So far, no breakdown in adult or juvenile morphology has been observed in *Eucalyptus strzeleckii* where its populations abut those of *Eucalyptus ovata*. Despite this, it remains a possibility that some exchange of genes has occurred in the past, remembering that *Eucalyptus strzeleckii* abuts *Eucalyptus ovata* on numerous fronts of its distribution.

Clearly *Eucalyptus ovata* and *Eucalyptus brookeriana* are close relatives of *Eucalyptus strzeleckii*. The fact that all three species are similar in a range of adult characters tends to reinforce this position on affinity. Obviously, the presence of surface wax in *Eucalyptus strzeleckii* reflects that it is following its own evolutionary path. Whether it diverged from *Eucalyptus ovata* or *Eucalyptus brookeriana* is open to speculation. The abundance of oil glands, the consistent, early development of square stems, the subcrenulate leaf margins and the slight lustre in its seedlings, as well as the similarities in bark, could lead to the interpretation that *Eucalyptus brookeriana* is closer. However, other seedling features, such as relatively long petioles, cuneate bases and limited discolor, might suggest it is nearer to *Eucalyptus ovata*. Further research may resolve this question of affinity.

#### KEY TO THE SPECIES OF SWAMP GUM IN SOUTHERN VICTORIA

1. Small trees with fibrous bark to the upper branches.....*Eucalyptus yarraensis*
1. Small, medium or tall trees with smooth bark on most of the trunk.....2
2. Juvenile leaves bluish, dull, margins entire or uneven, lightly glandular; adult leaves also lightly glandular; small to medium, spreading woodland trees  
..... *Eucalyptus ovata*
2. Juvenile leaves yellow-green, green or dark green, lustrous or semi-lustrous, crenulate or subcrenulate, conspicuously glandular; adult leaves also markedly glandular; medium to tall, erect forest trees.....3
3. Juvenile leaves lanceolate, broad-lanceolate or ovate, cuneate in the base; growth tips of intermediate, coppice and adult leaves lightly or conspicuously waxy; basal bark smooth, shed as strips or sheets  
.....*Eucalyptus strzeleckii*
3. Juvenile leaves ovate to orbicular, rounded to slightly cordate in the base; all growth tips non-waxy; basal bark finely fibrous, tessellated  
*Eucalyptus brookeriana*

2. *Eucalyptus petiolaris* (Boland) K. Rule *comb. et stat. nov.*

**BASEONYM:** *Eucalyptus leucoxydon* F. Muell. ssp. *petiolaris* Boland, *Australian Forest Research*, 9: 65–72 (1979).

**HOLOTYPE:** Pillaworta Creek near Pillaworta Hill, South Australia, 15 May, 1971, D.J. Boland 690 (FRI).

## DESCRIPTION:

*Robust mallees* or small trees. *Bark* smooth, grey or white sometimes with a loose, sub-fibrous basal stocking. *Seedling leaves* subsessile, ovate-elliptical, decussate 3 to 5 pairs, blue-green, discolorous. *Juvenile leaves* dull, blue-green, broad-lanceolate or ovate, petiolate, alternate, to 7 × 5 cm. *Adult leaves* lanceolate, green, semi-lustrous, to 15 × 2.5 cm. *Petioles* to 2 cm. *Buds* ovoid, cylindrical or slightly clavate. *Hypanthium* tapering into pedicel, prominently ribbed, to 15 × 8 mm. *Ovular rows* per locule 6–8. *Operculum* conical to slightly beaked, lightly ribbed. *Pedicels* approximately as long as buds. *Fruits* campanulate, subcampanulate or subcylindrical, lightly or conspicuously ribbed, to 16 × 14 mm. *Locules* 5 or 6. *Valves* to 4 mm below rim. Base of detached style surrounded by a conspicuous collar of lobes. *Pedicel* to 18 mm.

## SPECIMENS EXAMINED:

South Australia — 4 miles E of Coomunga, 34°39'S, 145°48'E, 12.x.1958, D.J.E. Whibley 369 (AD); 'Glenville', 25 km west of Cowell, 33°37'S, 136°40'E, 15.i.1973, D.A. Kleinig 40 (FRI); On south ridge of Carapee Hill, 16.v.1973, D.J. Boland (FRI); Darke Peak, 16.v.1973, D.J. Boland (FRI); c. 15 km N of Port Lincoln, 34°35'S, 135°52'E, 26.xi.1976, N.C. Collinson 205 (AD97717413); Southern Eyre Peninsula, 34°35'S, 135°50'E, 10.ii.1977, N.C. Collinson (AD98760984); West of Cowell on Cleve Road, Pootitnie Hill, 33°40'S, 136°39'E, 14.vi.1983, D. Blaxell & L. Johnson, (NSW).

## FLOWERING TIME:

Winter.

## DISTRIBUTION:

*Eucalyptus petiolaris* is endemic to the Eyre Peninsula of South Australia and has two main areas of distribution; one in the vicinity of Port Lincoln and the other near Cleve. It favours loamy soils on hilly or undulating terrain or may occur on rocky outcrops, for example, at Carapee Hill to the north-west of Cleve.

## CONSERVATION NOTES:

A species of a somewhat restricted distribution, *Eucalyptus petiolaris* is regarded as by no means plentiful. Its numbers have been depleted because of clearing for agriculture and its remnants are now confined to farms, roadsides and a few flora reserves, for example, in the Wanilla State Forest near Port Lincoln and at Carapee Hill Conservation Park near Darke Peak.

## ETYMOLOGY:

The subspecific epithet, which alludes to the petiolate juvenile leaves of the species, is maintained.

## DISCUSSION:

*Eucalyptus petiolaris* was erected as a subspecies within *Eucalyptus leucoxylon* by Boland (1979) who emphasised the divergent nature of its juvenile leaves, buds and fruits. Boomsma (1981), Chippendale (1988) and Brooker and Kleinig (1990) also referred to these distinguishing features, as did Rule (1991) who alluded to a possible reassessment of its status.

The populations of *Eucalyptus petiolaris* are geographically separated from the subspecies of *Eucalyptus leucoxylon* and no evidence of gradation has been observed. It differs from *Eucalyptus leucoxylon* in not possessing opposite, sessile juvenile leaves, which are features that bind the various subspecies together. In addition, the conspicuously ribbed buds, whose locules each possess 6–8 ovular rows, rather than 4 to 6 in the case of *Eucalyptus leucoxylon* and its subspecies, and its large, often conspicuously ribbed, campanulate fruits, with their conspicuous collar of lobes over the valves, contribute to its uniqueness.

*Eucalyptus petiolaris* is also one of the few eucalypts which possesses a wide range of flower colors. Although cream is the dominant color, red, pink, apricot and yellow flowers have also been observed.



The rapid development of petiolate, alternate juvenile leaves in *Eucalyptus petiolaris* viewed as one of the important criteria in its erection as a species. However, differences in leaf ontogeny have been used before in *Eucalyptus* taxonomy. Marginson and Ladiges (1988), for example, found that coastal populations of *Eucalyptus baxteri* (Benth.) Maiden & Blakely ex J. M. Black had an appreciably shorter period of juvenility than desert populations and highlighted this difference in their case for the erection of *Eucalyptus arenacea* Marginson & Ladiges as a new species. Fortunately, as in the case of *Eucalyptus arenacea*, *Eucalyptus petiolaris* has not been raised to a species only on the basis of a difference in leaf ontogeny. *Eucalyptus petiolaris* is regarded as being closely related to *Eucalyptus leucoxylon* on the basis of many shared features and it is suggested that the erection of an informal Superspecies *leucoxylon* would accommodate this level of affinity.

#### ACKNOWLEDGEMENTS

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