

## SHORT COMMUNICATION

### Notes on the distribution and conservation status of *Eucalyptus cannonii* R.T. Baker

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#### Introduction

The first collections of *Eucalyptus cannonii* were made by R.T. Baker in 1892, during collecting trips to the Rylstone and Goulburn River areas. Although Baker (1896) made numerous notes on many of the plants collected at that time, he made no remarks on the variation in *Eucalyptus macrorhyncha* (which then included *Eucalyptus cannonii*) despite claiming so in his later description of the taxon (Baker 1919).

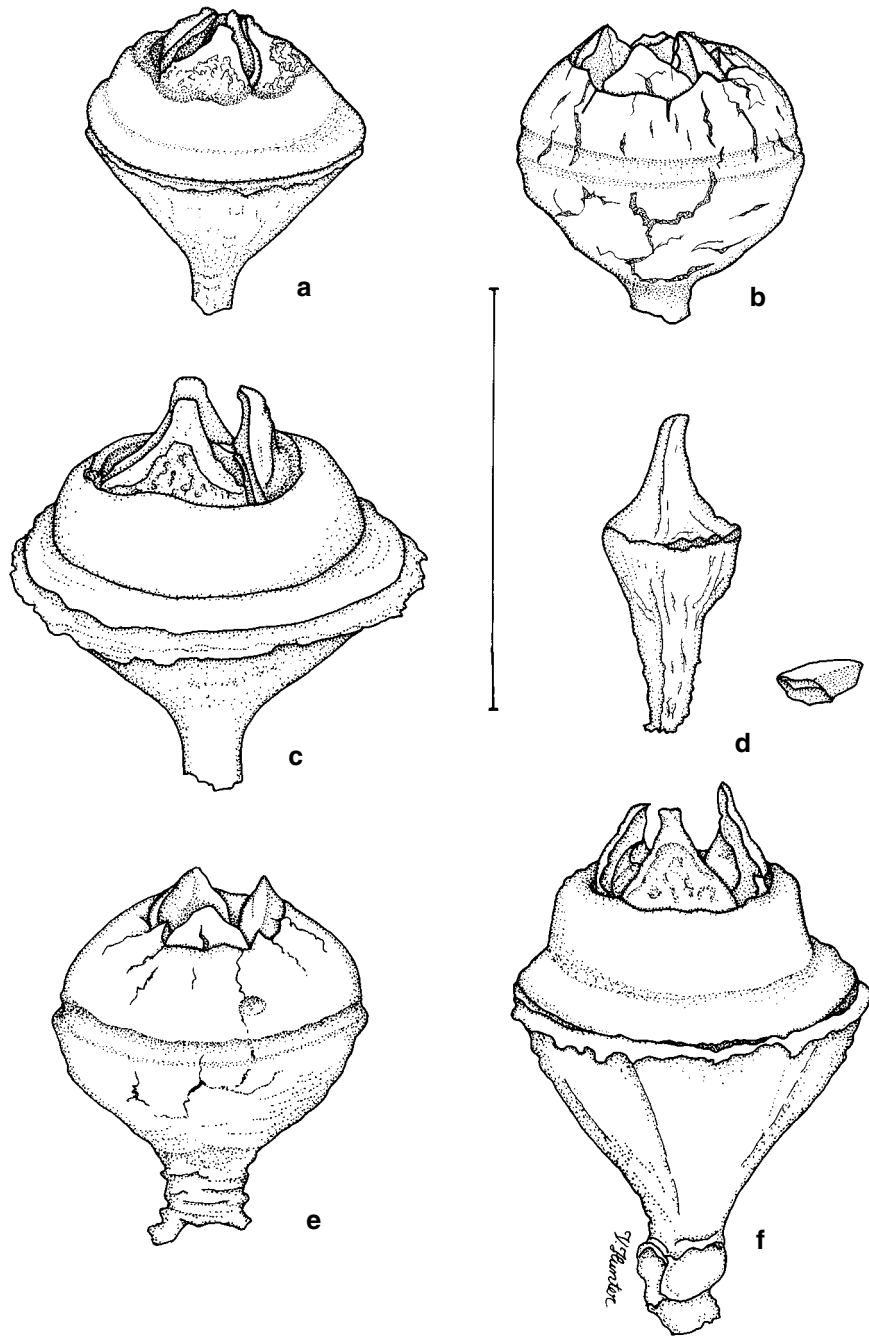
Recognition of the variation shown in what was to become *Eucalyptus cannonii* was given by Maiden (1907) in his *Critical Revision of the Genus Eucalyptus* (as *Eucalyptus macrorhyncha* 'grandiflora' form). Maiden highlighted the collections made by Baker from Rylstone and Mt Vincent as being coarser in form with a very prominent rim.

Baker (1919) described this taxon as *Eucalyptus cannonii*, named after Herbarium assistant Mr D. Cannon. Despite Maiden's comments, Baker (1919) indicated that data presented to him by Mr G. Harris (collector of the material cited by Baker) convinced him of the distinctiveness of the taxon. *Eucalyptus cannonii* was separated from *Eucalyptus macrorhyncha* on the shape of the fruit, buds, inflorescence and features of the timber and bark.

Penfold and Willis (1961) considered *Eucalyptus cannonii* to be distinctive local race of *E. macrorhyncha* and Johnson and Blaxell (1973) reduced *E. cannonii* to a subspecies of *E. macrorhyncha*, based on the intergradation where their ranges overlap. Hill (1991) retained specific status for *Eucalyptus cannonii*.

#### Distinguishing features

*Eucalyptus cannonii* is distinguished from *Eucalyptus macrorhyncha* by the by its fewer-flowered umbels (3–7 as opposed to 7–11), shorter pedicels (1–4 mm as opposed to 2–8 mm), the usually larger distinctly angular buds and the usually larger fruits with a distinct and prominent medial rim (Fig. 1). In his original description Baker (1919) also mentions wood characteristics such as a shorter grain, longer lasting in the ground, does not turn freely and straighter in grain. These wood characteristics do not appear to have been tested since Baker's notes.



**Fig. 1.** Variation in *Eucalyptus cannonii* and *E. macrorhyncha*. **a**, collection of *E. cannonii* from Eskdale Gulf, Winburndale Nature Reserve. **b**, *E. macrorhyncha* from Eskdale Gulf. **c**, *E. cannonii* fruit (left) and **d**, bud (right) from Palmers Link Road, Winburndale Nature Reserve. **e**, *E. macrorhyncha* from Palmers Link Rd. **f**, *E. cannonii* from Pearsons Lookout near Capertee, one of the most frequently collected localities. Scale Bar = 1 cm. Illustrations by Vanessa Hunter.

### Habitat

There appears to be no predictable habitat preferences for *Eucalyptus cannonii*. Evidence indicates wide tolerance of different conditions, with parent rock including: sandstone, shale, basalt, trachyte, claystone, and coarse conglomerates. Often this taxon is found higher on mountains and ridge tops with rocky soils such as talus slopes, cliffs, summits and spires, but it occurs also lower within valleys and on low undulating hills.

The associated taxa include *Eucalyptus blakelyi*, *Eucalyptus melliodora*, *Eucalyptus bridgesiana*, *Eucalyptus dalrympleana* and *Eucalyptus viminalis* on lower slopes. On rockier higher areas associates include *Eucalyptus mannifera* subsp. *praecox*, *Eucalyptus laevopinea*, *Eucalyptus polyanthemos*, *Eucalyptus oblonga*, *Eucalyptus rossii*, *Eucalyptus sparsifolia*, *Eucalyptus dives*, *Eucalyptus goniocalyx* and *Angophora intermedia*.

### Distribution

*Eucalyptus cannonii* occurs from east of Mudgee to east of Bathurst for 100 km in length and 60 km in width within the Central Tablelands and Central Western Slopes of New South Wales (Fig. 2). Considering putative hybrids the distribution of the taxon can be increased by c. 10 km to the north (110 km in total). At least 30 discernable populations are known (Fig. 2). Although most populations are in remnants, most of these are in areas unlikely to be cleared en masse in the near future. Populations are reserved within Wollemi and Gardens of Stone National Parks and Winburndale Nature Reserve. On a conservative estimate there are at least 6000 individuals within Winburndale Nature Reserve alone (Hunter 1998), and the total population must be well in excess of 10 000 individuals across the range of the species. Collections have been made from some localities over the last 100 years.

### Putative hybridisation

Hybridisation between species of *Eucalyptus* was recognised by some of the earliest collectors. Griffin et al. (1988) reviewed hybridisation in *Eucalyptus* and found that 55% of described taxa were known to form hybrids. Geographic proximity was the overriding important feature. Hybrids and putative introgression are consistently reported in population surveys within the genus (Potts & Wiltshire 1997). A large number of putative hybrids have been recognised with *Eucalyptus cannonii*, all of which have been with sympatric taxa, particularly *Eucalyptus macrorhyncha* but also with *Eucalyptus sparsifolia* and *Eucalyptus tenella*. It appears from the field survey (Hunter 1998) that *Eucalyptus cannonii* does freely hybridise and in many instances forms swarms and introgression zones particularly with *Eucalyptus macrorhyncha*.

### Present and past threats

Notes from early collections (Australian National Herbarium, NSW National Herbarium) and publications (Anderson 1947, Blakely 1955, Penfold & Willis 1961) indicate that early this century this species was considered rare. Subsequent collector's notes suggest that in several localities *Eucalyptus cannonii* is locally frequent, if not a

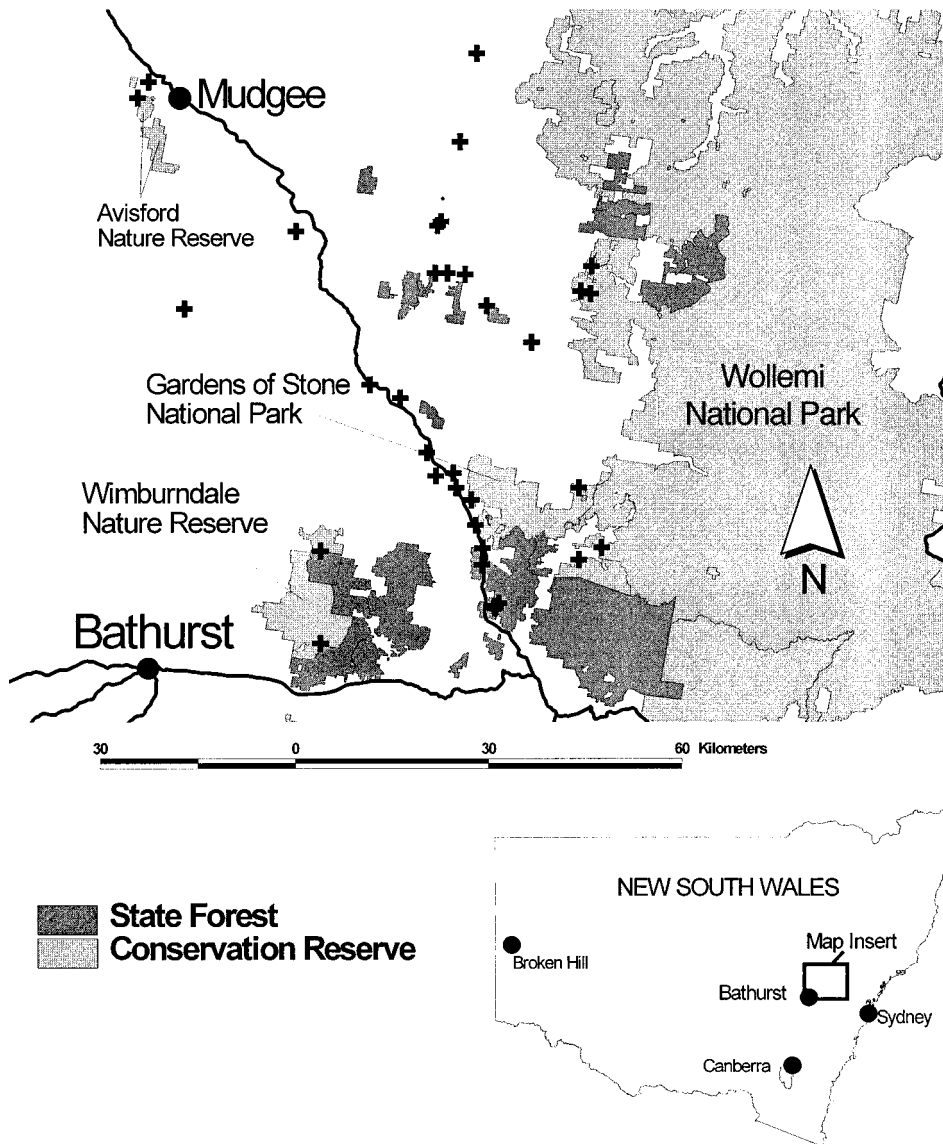


Fig. 2. Distribution of *Eucalyptus cannonii* based on all known records from the Australian National Herbarium and the New South Wales National Herbarium. + represents known populations.

dominant or co-dominant. It is likely that this taxon was locally frequent but rare and disjunct across its distribution prior to European settlement but that contraction and extinction of populations have occurred since settlement of the Rylstone and Capertee districts. The large areas of cleared agricultural land and the large scale *Pinus radiata* plantations are probably some of the more significant recent historical threats. Changes in fire regimes are unlikely to have caused any major negative changes in

populations as collections can still be made from all historical herbarium collection localities despite probable alterations to fire intensities and frequencies.

Throughout the species' distribution, clearing of land is probably the greatest risk to extant stands along with the suite of genetic and stochastic (i.e. disease) threats associated with the persistence of small isolated populations.

### Conservation status

Currently *Eucalyptus cannonii* is listed as a Vulnerable species under Schedule 2 of the NSW *Threatened Species Conservation Act* 1995. It is also listed under Schedule 1 part 2 of the Federal *Endangered Species Protection Act* 1992 under 'Species which are Vulnerable' and listed as a ROTAP coded 2VCI.

It is likely that *Eucalyptus cannonii* was rare prior to European settlement (Anderson 1947, Blakely 1955, Penfold & Willis 1961), and contraction has been caused by land clearing for agriculture. The taxon is conserved within three NSW National Parks and Wildlife Service reserves. As the minimum population within Winburndale Nature Reserve is at least 6000 individuals (Hunter 1998), and populations exist in Wollemi and Gardens of Stone National Parks, we consider that the species is adequately conserved. Most other present day localities are on rocky hillsides unlikely to be cleared for agricultural purposes. The *TSC Act* (1995) requires that a taxon is eligible for listing as vulnerable, if in the opinion of the Scientific Committee the taxon is likely to become endangered unless the circumstances threatening the taxon cease. The main threatening process in regards to this species is clearing for agricultural purposes. We consider that listing as a vulnerable species (Schedule 2) under the *TSC Act* (1995) is no longer appropriate due to the variation and size of populations within the current reserve network and the number of populations within non-productive lands in private ownership. Clearing can no longer be regarded as a process that may cause this species to become endangered.

Using the ROTAP scale (Briggs & Leigh 1996) the taxon is most appropriately categorised as 2RCa, until the size of all populations is known. The distribution category of 2 (known from less than 100 km) is retained, if only the distribution of non putative hybrids are considered, the species distribution is only just 100 km in length.

### Acknowledgements

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