

**Advice to the Minister for Sustainability, Environment,
Water, Population and Communities
from the Threatened Species Scientific Committee (the Committee)
on Amendment to the list of Threatened Species under the
*Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)***

1. Name

Brachychiton sp. Ormeau (L.H.Bird AQ435851).

The species is commonly known as the Ormeau bottle tree. It is in the Family Sterculiaceae.

2. Reason for Conservation Assessment by the Committee

This advice follows assessment of information provided by a public nomination to list the Ormeau bottle tree. The nominator suggested listing in the critically endangered category of the list.

3. Summary of Conclusion

The Committee judges that the species has been demonstrated to have met sufficient elements of Criteria 2 and 3 to make it eligible for listing as **critically endangered**, and of Criterion 4 to make it eligible for listing as **endangered**. The Ormeau bottle tree has been demonstrated to be **not eligible** for listing under Criteria 1 and 5.

The highest category for which the species is eligible to be listed is **critically endangered**.

4. Taxonomy

The species is conventionally accepted as *Brachychiton* sp. Ormeau (L.H.Bird AQ435851) although it has not been formally described (CHAH, 2012).

5. Description

The Ormeau bottle tree grows to a height of 25 m and has a distinctive swollen, bottle-like trunk. Its leaves are glossy, usually elliptical and 12–20 cm long. Juvenile trees lack a swollen trunk and have narrow leaves with 5–9 deep lobes. Numerous greenish-white, 10 mm diameter bell-shaped flowers grow in clusters at the ends of branches in September. Its fruit are brown, boat-shaped pods up to 3 cm long that ripen in January–February (Hauser and Blok, 2002; Leiper et al., 2008). Optimal conditions for flowering and fruiting appear to be during dry springs, when the plants become deciduous (Weber, pers. comm., 2012). New leaves are coppery to pale-green after the spring deciduous stage.

6. National Context

The Ormeau bottle tree is endemic to Australia and highly localised in the northern Darlington Range of south-east Queensland (Gold Coast Flora Fauna Database, 2012). The total population is known to number 161 wild plants and occurs in the Upper Pimpama and Albert River Catchments: 160 individuals including 140 mature adult trees occur in the Kingsholme/Upper Ormeau area and Pimpama River valley; a single wild plant occurs at Shaw's Pocket Rd in the Gold Coast Local Government Area. The species occurs at six known subpopulations and eight sites. The largest subpopulation comprises 131 trees in the Gold Coast City Environmental Park (Wongawallan Conservation Area); this is a stable, reproducing subpopulation. The next largest subpopulation numbers 15 trees and grows at a Lower Ormeau Gorge on private property where an application to develop a quarry has been lodged; nine trees occur in another subpopulation west of The Plateau Road on private property that has recently been purchased for extractive industry. A single tree at Shaw's Pocket Rd comprises another subpopulation; two single trees, one in Boral Environmental Reserve and the other on the Upper Pimpama River, grow 150m apart and are considered to

make up a fifth subpopulation. A sixth subpopulation is made up of a single tree separated by 400m from two others, all growing on private land on Cliff Barrons Rd.

The Ormeau bottle tree's special plant form is absent from other areas of coastal vine forest and is generally associated with inland areas. It is potentially of high scientific significance in understanding the evolution of the ecosystems of the Brigalow Belt bioregion, which often have emergent bottle trees (Weber, pers. comm., 2012).

The Ormeau bottle tree is currently listed as Endangered under the *Queensland Nature Conservation Act 1992*.

The species occurs in the SE Qld Catchments NRM region and the South Eastern Queensland IBRA.

7. Relevant Biology/Ecology

The Ormeau bottle tree is a distinctive canopy tree that grows in riparian rainforest. It occurs near small streams in rocky gorges comprising metasedimentary rocks among microphyll vine forest; and on quaternary alluvium near larger streams in notophyll vine forest communities. It seems to favour undisturbed rainforest with few weeds for reproduction (Weber, pers. comm., 2012). It is a long-lived perennial that reaches sexual maturity at approximately 20 years and 20–30 cm DBH in the wild (Leiper, pers. comm., 2012). Its life expectancy is greater than 100 years and possibly greater than 120 years (Weber, pers. comm., 2012). The Ormeau bottle tree is probably pollinated by birds, bats or insects (Weber, pers. comm., 2012). Vegetative reproduction has not been observed in the wild. There is no evidence that *Brachychiton* sp. Ormeau (L.H. Bird AQ435851) forms natural hybrids.

The entire population is dominated by mature trees (87 per cent) and only three of the six subpopulations show any evidence of recruitment, such as juvenile and seedling plants. A slow rate of reproduction is likely to be exacerbated by natural senescence. Attack by harlequin beetles prevents recruitment of juvenile plants (Leiper, pers. comm., 2012).

8. Description of Threats

The main current threat to the Ormeau bottle tree is extractive industry (quarrying). A proposed quarry has the potential to impact on 15 wild plants (nine per cent of the total population) and three per cent of the species' remaining habitat (Weber, pers. comm., 2012). Another subpopulation, comprising nine plants and 0.5 ha of habitat, occurs on land that may be subject to future quarrying, although no development applications have been lodged to date.

The second main current threat is invasion of habitat by weeds, including lantana (*Lantana camara*), Guinea grass (*Megathyrsus maximus*) and Mickey Mouse bush (*Ochna serrulata*), which prevent recruitment of juvenile plants (Weber, pers. comm., 2012).

Past clearing of dry rainforest for agriculture has fragmented populations of the Ormeau bottle tree, reduced potential habitat for the species and almost certainly reduced one subpopulation to one specimen (Weber, pers. comm., 2012). Riparian rainforest that formerly grew along the upper Pimpama River probably once provided almost continuous habitat between subpopulations, enabling pollen transfer and interbreeding to occur regularly. At least three populations in the Pimpama River valley now consist of only a single mature tree. Extent and quality of habitat is declining in all subpopulations outside the Gold Coast City Environmental Park (Wongawallan Conservation Area), where 131 plants survive (Queensland Government, 2009).

Other threats which prevent recruitment of juvenile plants include grazing and trampling by livestock, mowing, and collection of seeds for horticulture, which can reduce seed viability in isolated specimens to less than five per cent (Leiper, pers. comm., 2012).

Fire is a potential threat to the species. High intensity fires may kill adult trees and low intensity fires may kill juvenile plants (Leiper, pers. comm., 2012). Invasive weeds, such as Guinea grass (*Megathyrsus maximus*) and lantana (*Lantana camara*) can alter fuel loads and fire intensity (Gentle and Duggin, 1997).

Further current threats include low genetic diversity, and loss of fitness through inbreeding (Shapcott, 2012). Owing to the small total number of wild plants, all populations should be considered important for maintenance of genetic diversity, although the three reproducing subpopulations should be considered most important.

The tree's area of occurrence is increasingly under threat from residential development, extractive industry and modifications to infrastructure (Queensland Government, 2009).

9. Public Consultation

The nomination was made available for public exhibition and comment for 30 business days. Two public comments were received advocating conservation of the Ormeau bottle tree, but they had no relevance to the survival of the species.

10. How judged by the Committee in relation to the criteria of the EPBC Act and Regulations

The Committee judges that the species is **eligible** for listing as **critically endangered** under the EPBC Act. The assessment against the criteria is as follows:

Criterion 1: It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

Regional Ecosystem mapping has shown that past clearing of dry rainforest for agriculture in the Pimpama River valley and Upper Ormeau area has fragmented populations of the Ormeau bottle tree and reduced potential habitat for the species. There are only 140 adult trees in existence and two adult trees have died in the past 20 years. At least three populations in the Pimpama River valley now consist of only a single mature tree. The species is unlikely to undergo extreme natural population fluctuations. Past clearing of riparian rainforest has removed contiguous habitat between subpopulations, preventing regular pollen transfer and interbreeding. It has a slow rate of reproduction and current recruitment of juvenile plants is low owing to threats such as mowing, seed collection for horticulture, weed infestation, and trampling and grazing by livestock. These factors are likely to contribute to further and continuing reduction in numbers.

Although the Committee judges that the species is suspected to have undergone a reduction in numbers, there are insufficient data available to judge whether the reduction would be very severe, severe, substantial, or not substantial. Therefore, the species has not been demonstrated to have met each of the required elements of Criterion 1, and is **not eligible** for listing in any category under this criterion.

Criterion 2: Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited

The Ormeau bottle tree is endemic to Australia. Its geographical distribution is restricted to the northern Darlington Range of south-east Queensland. The total population occurs in the Upper Pimpama and Albert River Catchments; extensive surveys have located only 161 wild plants. Only six subpopulations are known: 140 mature individuals are known from the Kingsholme/Upper Ormeau area and Pimpama River valley; and a single wild plant occurs at Shaw's Pocket Rd in the Gold Coast Local Government Area. The known distribution of the species is small and fragmented with limited opportunity for recruitment. The extent of occurrence is 6.34 km² and area of occupancy is less than 1 km². Extent and quality of habitat is declining in all subpopulations outside the Gold Coast City Environmental Park (Wongawallan Conservation Area), which supports 131 individuals, making a natural recovery of the species unlikely in the short-medium term.

The Committee considers that the species has a very restricted geographic distribution, which is precarious for the survival of the species due to threats such as extractive industries (quarrying), weed invasion and low seedling recruitment. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 2 to make it **eligible** for listing as **critically endangered**.

Criterion 3: The estimated total number of mature individuals is limited to a particular degree; and either

(a) evidence suggests that the number will continue to decline at a particular rate; or

(b) the number is likely to continue to decline and its geographic distribution is precarious for its survival

The estimated total number of mature individuals is 140, which, considering the fragmented and limited geographic distribution of the species, the Committee considers to be very low. Evidence suggests that the species will continue to decline through senescence and lack of seedling recruitment, and removal of mature specimens due to extractive industries. Rate of decline through senescence is estimated to be six per cent over the next 100 years or two generations. Seedling recruitment is inhibited by weed invasion, grazing and trampling by livestock, and collection of seeds for horticulture. Extractive industries have the potential to remove at least nine per cent of the total population in the next decade. The species' extent of occurrence is 6.34 km² and its area of occupancy is less than 1 km². Extent and quality of habitat is declining in all subpopulations outside the Gold Coast City Environmental Park (Wongawallan Conservation Area), making a natural recovery of the species unlikely in the short-medium term.

The Committee considers that the estimated total number of mature individuals of the species is very low; and that evidence suggests that the number is likely to decline and the species' geographic distribution is precarious for the survival of the species. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 3b to make it **eligible** for listing as **critically endangered**.

Criterion 4: The estimated total number of mature individuals is extremely low, very low or low

The estimated total number of mature individuals is 140. For a tree with high longevity, slow rate of maturity and seedling recruitment compromised by weed invasion, grazing, trampling by livestock and collection of seeds for horticulture, the Committee considers that the estimated total number of mature individuals of the species is very low. Therefore, the species has been demonstrated to have met the relevant element of Criterion 4 to make it **eligible** for listing as **endangered**.

Criterion 5: Probability of extinction in the wild that is at least

- (a) 50% in the immediate future; or**
- (b) 20% in the near future; or**
- (c) 10% in the medium-term future**

There are insufficient data available to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore, as the species has not been demonstrated to have met the required elements of Criterion 5, it is **not eligible** for listing in any category under this criterion.

11. Conclusion

Conservation Status

Brachychiton sp. Ormeau (L.H. Bird AQ435851) (Ormeau bottle tree) was nominated for inclusion in the list of threatened species referred to in section 178 of the EPBC Act. The nominator suggested listing in the critically endangered category of the list.

The Committee considers the geographic distribution of the Ormeau bottle tree to be precarious given its small and fragmented distribution, rate of senescence, low seedling recruitment and lack of connecting habitat to enable regular pollination and interbreeding. The species' extent of occurrence is 6.34 km² and its area of occupancy is less than 1 km².

The species has been demonstrated to have met sufficient elements of Criteria 2 and 3b to make it eligible for listing as **critically endangered**, and of Criterion 4 to make it eligible for listing as **endangered**. The Ormeau bottle tree has been demonstrated to be **not eligible** for listing under Criteria 1 and 5.

The highest category for which the species is eligible to be listed is **critically endangered**.

Recovery Plan

There should not be a recovery plan for *Brachychiton* sp. Ormeau (L.H. Bird AQ435851) as the approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats.

The largest viable population (131 plants) is protected inside Gold Coast City Environmental Park (Wongawallan Conservation Area). Only two other subpopulations, consisting of 15 and nine plants, respectively, are currently reproducing; all other subpopulation consist of scattered, non-reproducing trees. Threat aversion and mitigation for the two most important subpopulations outside the Wongawallan Conservation Area will therefore require engagement with only one major stakeholder (i.e. the proprietor of the proposed quarries at both major sites outside the conservation reserve).

12. Recommendations

- (i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **critically endangered** category:

Brachychiton sp. Ormeau (L.H. Bird AQ435851)

- (ii) The Committee recommends that there should not be a recovery plan for this species.

Threatened Species Scientific Committee

07 June 2012

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