

**Approved Conservation Advice for
Brachychiton sp. Ormeau (L.H.Bird AQ435851)(Ormeau bottle tree)**

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Brachychiton sp. Ormeau (L.H.Bird AQ435851) (Ormeau bottle tree), Family Sterculiaceae, is a tree with a distinctive swollen, bottle-like trunk. It grows to a height of 25 m and has glossy leaves which are 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. Optimal conditions for flowering and fruiting appear to be during dry springs, when the plants become deciduous. New leaves are coppery to pale-green after the spring deciduous stage (Hauser and Blok, 2002; Leiper et al., 2008; CHAH, 2012).

Conservation Status

The Ormeau bottle tree is listed as critically endangered. This species is eligible for listing as critically endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as it has a restricted geographic distribution with an estimated extent of occurrence of 6.5 km². Its estimated area of occupancy is less than 1 km². The species' geographic distribution is precarious for its survival given the nature of ongoing threats (TSSC, 2012).

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

Cultural Significance

No Indigenous cultural values for the species are known.

Distribution and Habitat

The Ormeau bottle tree occurs only in the northern Darlington Range of south-east Queensland (Gold Coast Flora Fauna Database, 2012). Its area of occupancy is less than 1 km² and its extent of occurrence is approximately 6.5 km². The total population is highly localised in the Upper Pimpama and Albert River Catchments, and numbers only 161 individuals. Six subpopulations are known: 160 wild plants including 140 mature adult trees are known from 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 Ormeau bottle tree is a distinctive canopy tree that grows in riparian rainforest. It occurs near small streams in rocky gorges comprised of 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 (Hauser and Blok, 2002; Leiper et al., 2008). It is a long-lived perennial that reaches sexual maturity at approximately 20 years and 20–30 cm diameter at breast height (DBH) in the wild (Weber, pers. comm., 2012). Its life expectancy is greater than 100 years and its natural mortality is estimated to be greater than 120 years (Weber, pers. comm., 2012). Rate of decline through senescence is estimated to be six per cent over the next 100 years or two generations.

This species occurs within the South Eastern Queensland IBRA bioregion and the SE Qld Catchments Natural Resource Management Region.

The distribution of this species is associated with the 'Lowland Rainforest of Subtropical Australia' EPBC Act-listed threatened ecological community.

Threats

The main identified threats to the Ormeau bottle tree are extractive industry (quarrying), invasion of habitat by weeds, lack of seedling recruitment and lack of genetic diversity (Weber, pers. comm., 2012).

A proposed quarry has the potential to impact on 15 wild plants (nine per cent of the global population) and three per cent of the species' remaining habitat. Another subpopulation, comprised of 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. These are the only two reproducing subpopulations outside of the Gold Coast City Council Environmental Park.

The second most important 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. 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 single mature trees. Extent and quality of habitat is declining in all subpopulations outside the Gold Coast City Environmental Park, where 131 plants survive.

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

The main potential threats to the Ormeau bottle tree include fire; low genetic diversity, loss of fitness through inbreeding depression and genetic bottlenecks; residential development, extractive industry and modifications to infrastructure (Queensland Government, 2009).

High intensity fires may kill adult trees and low intensity fires may kill juvenile plants. Invasive weeds, such as Guinea grass (*Megathyrsus maximus*) and lantana (*Lantana camara*) can alter fuel loads and fire intensity (Gentle and Duggin, 1997).

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.

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Undertaking survey work in suitable habitat and potential habitat to locate any additional remnants.
- Designing and implementing a monitoring program.
- More precisely assessing ecological requirements and the relative impacts of threatening processes.
- Undertaking seed germination and/or vegetative propagation trials to determine the requirements for successful establishment.
- Undertaking genetic analyses to:

- assess current gene flow (using markers and analyses capable of distinguishing population divergence on an evolutionary timescale, from that which might be due to more recent impacts); and
- identify populations with low genetic diversity that might benefit from artificial introduction of genetic material from other populations from which they have relatively recently diverged.
- Investigating the potential and efficacy of DNA-based or other approaches for the identification of individual plants and/or populations to provide a means for detecting and prosecuting illegal collection from the wild (see for example Palsboll *et al.*, 2006).
- Identifying optimal fire regimes for regeneration (vegetative regrowth and/or seed germination), and response to other prevailing fire regimes.

Priority Actions

The following priority recovery and threat abatement actions can be done to support the recovery of the Ormeau bottle tree.

Habitat Loss, Disturbance and Modification

- Minimising adverse impacts from land use, such as extractive industry (quarrying), at known sites.
- Protecting populations of the listed species through the development of conservation agreements and/or covenants.
- Controlling access routes to suitably constrain public access to known sites on public land.
- Suitably controlling and managing access on private land and other land tenure.
- Monitoring the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Ensuring there is no disturbance in areas where the Ormeau bottle tree occurs, excluding necessary actions to manage the conservation of the species.
- Investigating formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigating and/or securing inclusion in reserve tenure if possible.
- Managing any other known, potential or emerging threats, such as illegal collection of seedlings for horticulture, mowing and predation of seeds by harlequin beetles.

Invasive Weeds

- Identifying and removing weeds in the local area that could become a threat to the Ormeau bottle tree, such as lantana (*Lantana camara*), Guinea grass (*Megathyrsus maximus*) and Mickey Mouse bush (*Ochna serrulata*), using appropriate methods.
- Managing sites to prevent further introduction of invasive weeds that could become a threat to the Ormeau bottle tree, using appropriate methods.
- Developing and implementing a management plan for the control of lantana (*Lantana camara*), Guinea grass (*Megathyrsus maximus*) and Mickey Mouse plant (*Ochna serrulata*) in the region.
- Ensuring chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the Ormeau bottle tree.

Trampling, Browsing or Grazing

- If livestock grazing occurs in the area, ensuring land owners/managers use an appropriate management regime and density that does not detrimentally affect this species to allow regeneration from seedlings.
- Where appropriate, managing total grazing pressure at important sites through exclusion fencing or other barriers on private land or leased crown land.

Fire

- Developing and implementing a suitable fire management strategy for the habitat and local populations of the Ormeau bottle tree. Identifying optimal frequency and intensity of fire interval to ensure juvenile recruitment and survival of adult plants. Ensuring invasive weeds are controlled to a level where they do not increase fuel loads.
- Where appropriate providing maps of known occurrences to local and state Rural Fire Services and seeking inclusion of mitigative measures in bush fire risk management plan/s, risk register and/or operation maps.

Conservation Information

- Engaging with private landholders and land managers responsible for the land on which the most important subpopulations occur and encouraging these key stakeholders to contribute to the implementation of conservation management actions.
- Raising awareness of the Ormeau bottle tree within the local community, using fact sheets, information brochures and field days in conjunction with extractive industry (quarrying), graziers and community interest groups, such as local natural history groups and the Wildlife Preservation Society of Queensland.

Enabling recovery of additional sites and/or populations

- Undertaking appropriate seed collection and storage.
- Investigating options for linking, enhancing or establishing additional populations.
- Implementing national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

This list does not necessarily encompass all actions that may be of benefit to the Ormeau bottle tree, but highlights those that are considered to be of highest priority at the time of preparing the Approved Conservation Advice.

Existing Plans/Management Prescriptions that are Relevant to the Species

These prescriptions were current at the time of publishing; please refer to the relevant agency's website for any updated versions.

- Gold Coast City Council Nature Conservation Strategy 2009-2019
<http://www.goldcoastflorafauna.com.au/?control=speciesdetails&SpeciesId=5457&GenusId=1648>

References cited in the advice

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