

Conservation Advice: *Solanum bauerianum* Endl. (Bridal Flower) (Solanaceae)

Distribution: Only known from Lord Howe Island and Norfolk Island group

Current EPBC Act Status: Not Listed

Current NSW TSC Act Status: Extinct

Proposed change for alignment: List on EPBC Act as Extinct

### Summary of Conservation Assessment

*Solanum bauerianum* Endl. (Bridal Flower) is eligible for listing as Presumed Extinct

The main reasons for the species being eligible for listing as extinct is that it is now globally extinct and can no longer be found on either Lord Howe Island or the Norfolk Island Group. The last collection from Norfolk Island Group was 1830 (although it may have been seen in 1904), while the last collection from Lord Howe Island was in 1937. Loss of habitat and impacts of pigs, goats, rabbits and introduced rats are all thought to have contributed to the extinction of this species on Norfolk Is and Lord Howe Is. Several targeted searches over the past 30-40 years have failed to locate the species at its last known location (Lord Howe Island) (Pickard 1983, Hutton 2005).

### Description

Green (1984) states that "*Solanum bauerianum* Endl. (family Solanaceae) is described as a 'shrub or small tree to c. 3 m tall, glabrous; wood soft. Leaves alternate or sometimes paired, unequal; lamina lanceolate-elliptic, 6-13 cm long, 2.5-6 cm broad, acute at base, attenuate onto petiole, entire or irregularly and coarsely dentate-undulate, acute to acuminate at apex, blunt tipped. Inflorescence terminal or axillary, densely cymose-paniculate, many flowered; peduncle 1.5-3.5 cm long; pedicel 5-10 mm long,  $\pm$ deflexed in fruit. Calyx 1.5-2 mm long; lobes short and broad, apiculate. Corolla rotate-stellate, 1.5-1.7 cm diam., white; lobes broadly ovate-triangular, apiculate. Anthers 2 mm long. Berry globose, c.6 mm diam., bright red or scarlet. Seeds c. 3 mm long."

### Distribution

Green (1994) states that *Solanum bauerianum* is endemic to the Norfolk Island Group and Lord Howe Island, but is presumed extinct on both. For Norfolk Is, there are no specimens after 1830 although Maiden (1904) had fruits of plants from Phillip Is (part of the Norfolk Is Group) described to him as 'like bright red, elongated tomato' (Green 1994) and these may have been fruits of *S. bauerianum*. The species is reported as extinct on Phillip island (Mills 2009) and Norfolk Island (Mills 2008).

The NSW Scientific Committee (2010) state that "*Solanum bauerianum* is now extinct globally. It was only known from the Lord Howe Island and the Oceanic Norfolk Island group (Rabbit and Norfolk Islands). In NSW, the species was restricted to Lord Howe Island (Green 1994), where the last wild collection was made in 1937 (Pickard 1983), although a 1949 collection from cultivation is known (Green 1994)." "Searches of Lord Howe Island have been unsuccessful in locating *Solanum bauerianum*. Pickard (1983) undertook intensive searches in the period of 1970-1980, but failed to find any plants. Hutton (2005) failed to find the species after targeted searching at known collection locations, taken from records at the National Herbarium of NSW. He also searched areas where trees had previously been seen including Little Mutton Bird Ground, North Bay, Steven's Reserve, and in the rectory garden, but could not locate any plants."

Incidental searches since 2006 have failed to find the species.

## Ecology

For the Lord Howe Island location, NSW Scientific Committee (2010) state that “The habitat of the plant can be inferred from where specimens have previously been collected. This includes valley floors with lowland *Drypetes/Cryptocarya* (Greybark/Blackbutt) rainforest through to more stunted vegetation towards the ridge tops also containing *Celtis conferta* spp. *amblyphylla* (Cottonwood), *Olea paniculata* (Maulwood), *Lagunaria patersonia* (Sallywood), *Ochrosia elliptica* (Berrywood), and mixes with smaller shrubs such as *Dodonaea viscosa* (Hopwood), *Rapanea platystigma*, *Cassinia tenuifolia* (Bully bush) and *Myoporum insulare* (Juniper).”

There are no details for the Norfolk Island Group.

## Threats

For the Lord Howe Island location, the NSW Scientific Committee (2010) state that “The causes of decline and extinction of *Solanum bauerianum* are unknown, however there are a number of factors that may have contributed to the demise of the species. Areas of suitable habitat for *Solanum bauerianum* have been cleared and fragmented to make way for settlements and grazing land.” “Cattle, goats and pigs may have affected the species in the past through grazing and disturbance of habitat.” “Rats were introduced to Lord Howe Island in 1918 and are thought to have eaten the fruits and seeds of *Solanum bauerianum* (Auld & Hutton 2004).” “Numerous weeds occur in disturbed habitats throughout the island. Pickard (1984) has documented the increase in invasion of weeds on the island up to 1981.”

There are no details for the Norfolk Island Group. Much of the vegetation of Phillip Island was removed by introduced grazers such as pigs (Maiden, 1904 reported the island had been “reduced almost to the condition of a bare rock”), goats and rabbits (Coyne 2010). Introduced rats, clearing and weeds all probably contributed to the loss of *Solanum bauerianum* on Norfolk Island.

## References

- Auld TD, Hutton I (2004) Conservation issues for the vascular flora of the Lord Howe Island. *Cunninghamia* **8**, 490-500.
- Coyne P (2010) Ecological rebound on Phillip Island, South Pacific. *Ecological Management and Restoration* **11**, 4-15.
- Green PS (1994) 'Flora of Australia Vol. 49 Oceanic Islands 1'. (Australian Government Printing Service: Canberra), pp. 293-305.
- Hutton I (2005) 'Rare plants survey 2 - Lord Howe Island'. Report to Department of Environment and Conservation NSW.
- IUCN Standards and Petitions Subcommittee (2016) Guidelines for Using the IUCN Red List Categories and Criteria. Version 12. Prepared by the Standards and Petitions Subcommittee. <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.
- Maiden JH (1904) The flora of Norfolk Island. Part 1. *Proc Linn Soc NSW* **28**, 692-785.
- Mills K (2008) Plant conservation on a remote oceanic island: the case of Norfolk Island. *Australasian Plant Conservation* **17**, 22-24.

Mills K (2009) The vegetation of Phillip Island Norfolk Island Group.  
<http://www.econorfolk.nf/pdf/Kevin%20Mills%20Report%20Body.pdf>

NSW Scientific Committee (2010) Final Determination to list the shrub *Solanum bauerianum* Endl., Bridal Flower as a SPECIES PRESUMED EXTINCT. Accessed 30<sup>th</sup> August 2016.  
<http://www.environment.nsw.gov.au/determinations/solanumbauerianumFD.htm>

Pickard J (1983) Rare or threatened vascular plants of Lord Howe Island. *Biological Conservation* **27**, 125-139.

Pickard J (1984) Exotic plants on Lord Howe Island: distribution in space and time, 1853-1981. *Journal of Biogeography* **11**, 181-208.

# NSW SCIENTIFIC COMMITTEE

## Final Determination

The Scientific Committee, established by the Threatened Species Conservation Act, has made a Final Determination to list the shrub *Solanum bauerianum* Endl., Bridal Flower as a SPECIES PRESUMED EXTINCT in Part 4 of Schedule 1 of the Act. Listing of Species Presumed Extinct is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Solanum bauerianum* Endl. (family Solanaceae) is described as a “shrub or small tree to c. 3 m tall, glabrous; wood soft. Leaves alternate or sometimes paired, unequal; lamina lanceolate-elliptic, 6-13 cm long, 2.5-6 cm broad, acute at base, attenuate onto petiole, entire or irregularly and coarsely dentate-undulate, acute to acuminate at apex, blunt tipped. Inflorescence terminal or axillary, densely cymose-paniculate, many flowered; peduncle 1.5-3.5 cm long; pedicel 5-10 mm long,  $\pm$ deflexed in fruit. Calyx 1.5-2 mm long; lobes short and broad, apiculate. Corolla rotate-stellate, 1.5-1.7 cm diam., white; lobes broadly ovate-triangular, apiculate. Anthers 2 mm long. Berry globose, c.6 mm diam., bright red or scarlet. Seeds c. 3 mm long.” (Green 1994).
2. *Solanum bauerianum* is now extinct globally. It was only known from the Lord Howe Island and the Oceanic Norfolk Island group (Rabbit and Norfolk Islands). In NSW, the species was restricted to Lord Howe Island (Green 1994), where the last wild collection was made in 1937 (Pickard 1983), although a 1949 collection from cultivation is known (Green 1994).
3. Searches of Lord Howe Island have been unsuccessful in locating *Solanum bauerianum*. Pickard (1983) undertook intensive searches in the period of 1970-1980, but failed to find any plants. Hutton (2005) failed to find the species after targeted searching at known collection locations, taken from records at the National Herbarium of NSW. He also searched areas where trees had previously been seen including Little Mutton Bird Ground, North Bay, Steven’s Reserve, and in the rectory garden, but could not locate any plants.
4. The habitat of the plant can be inferred from where specimens have previously been collected. This includes valley floors with lowland *Drypetes/Cryptocarya* (Greybark/Blackbutt) rainforest through to more stunted vegetation towards the ridge tops also containing *Celtis conferta* spp. *amblyphylla* (Cottonwood), *Olea paniculata* (Maulwood), *Lagunaria patersonia* (Sallywood), *Ochrosia elliptica* (Berrywood), and mixes with smaller shrubs such as *Dodonaea viscosa* (Hopwood), *Rapanea platystigma*, *Cassinia tenuifolia* (Bully bush) and *Myoporum insulare* (Juniper).
5. The causes of decline and extinction of *Solanum bauerianum* are unknown, however there are a number of factors that may have contributed to the demise of the species. Areas of suitable habitat for *Solanum bauerianum* have been cleared and fragmented to make way for settlements and grazing land. ‘Clearing of native vegetation’ is listed as a Key Threatening Process under the *Threatened Species Conservation Act* 1995. Cattle, goats and pigs may have affected the species in the past through grazing and disturbance of habitat. ‘Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa* Linnaeus 1758’ and ‘Competition and habitat degradation by Feral Goats, *Capra hircus* Linnaeus 1758’ are listed as Key Threatening Processes under the

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*Threatened Species Conservation Act 1995*. Rats were introduced to Lord Howe Island in 1918 and are thought to have eaten the fruits and seeds of *Solanum bauerianum* (Auld & Hutton 2004). 'Predation by the Ship Rat *Rattus rattus* on Lord Howe Island' is listed as a Key Threatening Process under the *Threatened Species Conservation Act 1995*. Numerous weeds occur in disturbed habitats throughout the island. Pickard (1984) has documented the increase in invasion of weeds on the island up to 1981.

6. *Solanum bauerianum* Endl. is eligible to be listed as a Species Presumed Extinct at a particular time as, in the opinion of the Scientific Committee it has not been recorded in its known or expected habitat in New South Wales, despite targeted surveys, over a time frame appropriate, in the opinion of the Scientific Committee, to its life cycle and form.

Dr Richard Major  
Chairperson  
Scientific Committee

Proposed Gazettal date: 13/08/10  
Exhibition period: 13/08/10 – 08/10/10

## References:

- Auld TD, Hutton I (2004) Conservation issues for the vascular flora of the Lord Howe Island. *Cunninghamia* **8**, 490-500.
- Green PS (1994) 'Flora of Australia Vol. 49 Oceanic Islands 1'. (Australian Government Printing Service: Canberra), pp. 293-305.
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- Pickard J (1984) Exotic plants on Lord Howe Island: distribution in space and time, 1853-1981. *Journal of Biogeography* **11**, 181-208.