

morrisbys gum

Eucalyptus morrisbyi

TASMANIAN THREATENED FLORA LISTING STATEMENT



Photograph: Naomi Lawrence

Scientific name: *Eucalyptus morrisbyi* Brett, *Proc. R. Soc. Tasm.* 1938: 129 (1939)

Family: Myrtaceae

Common name: Morrisbys gum (Wapstra *et al.* 2005)

Status: *Threatened Species Protection Act 1995:* **endangered**

Environment Protection and Biodiversity Conservation Act 1999:

Endangered

Regional Forest Agreement: **Priority species**

Distribution Endemic status: **Tasmanian endemic**

Tasmanian NRM Region: **South**



Figure 1. Distribution of *Eucalyptus morrisbyi*

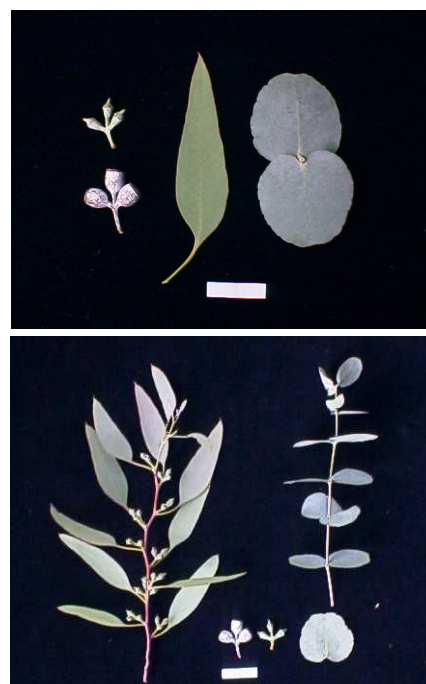


Plate 1. Buds, capsules and juvenile and adult leaves of *Eucalyptus morrisbyi* (Photographs: B. Potts)

IDENTIFICATION AND ECOLOGY

Eucalyptus morrisbyi is a small tree, growing to a height of approximately 6 to 12 m. Recruitment is from canopy held seed that is released after fire and other disturbance. Trees can resprout from lignotubers and epicormic buds after damage. Peak flowering occurs from February to May.

Description

While *Eucalyptus morrisbyi* is generally rough barked at the base of the trunk, the old bark is shed further up leaving the upper part of the trunk and the branches smooth and brown, white-grey or pink-grey in colour. The bluish-green juvenile leaves are glaucous, unstalked and rounded, 2 to 3 cm long and 2 to 4 cm wide. They are arranged in opposite pairs. The adult leaves are stalked, less glaucous and arranged alternately. They are about 5 to 10 cm long and 1.5 to 4 cm wide. The flower buds have a pointed cap and are glaucous and shortly stalked. They arise in clusters of three from the leaf axils. The flowers are cream and develop into cylindrical, glaucous, woody capsules, 9 to 11 mm long and 6 mm wide (Plate 1).

Confusing Species

Eucalyptus morrisbyi can be confused with cider gum (*Eucalyptus gunnii*) and heart leaved silver gum (*Eucalyptus cordata*). It can be distinguished from *Eucalyptus gunnii* by its coastal lowland habitat and presence of warty protuberances on buds and capsules. It can be distinguished from *Eucalyptus cordata* by its smaller capsules that occur in the axils of adult leaves only. Refer also to Wiltshire and Potts (2007). *Eucalyptus morrisbyi* can hybridise with white gum (*Eucalyptus viminalis*) and some stands and older plantings contain a large proportion of hybrid trees.

DISTRIBUTION AND HABITAT

Eucalyptus morrisbyi is endemic to Tasmania and natural populations are known only from Calverts Hill and two small nearby remnant stands near Cremorne, as well as from a small population 21 km away in the Government

Hills near Risdon (Figure 1). The stands occupy approximately 12.5 hectares in total. A number of conservation plantings have been made at other sites and when fully established and self-perpetuating, these will extend the range of the species. In addition, *Eucalyptus morrisbyi* has been widely planted as a specimen tree and ornamental.

In natural stands, *Eucalyptus morrisbyi* occurs in coastal, dry sclerophyll woodland on gentle to hilly slopes with poor drainage. It tends to be restricted to gullies that offer some relief in this drought prone, low rainfall area. It is associated with poor soils, with the Calverts Hill population and associated remnant stands occurring on recent sands overlying dolerite and the Risdon population on Permian mudstone. The species tends to occur in relatively pure stands with a number of other eucalypt species occurring nearby.

RESERVATION STATUS

Eucalyptus morrisbyi is formally protected in the Calverts Hill Nature Reserve and the East Risdon State Reserve. The Lumeah Point stand occurs in a coastal reserve that has been leased to the Clarence Council for recreational use.

POPULATION ESTIMATE

Eucalyptus morrisbyi is known only from two locations in the wild. In the Cremorne area, the population has been fragmented into the Calverts Hill stand, and two small remnant stands at Lumeah Point and Honeywood Drive approximately 2 km away. The species is no longer present at some sites where it was collected in the past in the Cremorne area. Numbers in the two small remnant stands have been supplemented by plantings and other plantings in the area have been made. A census of trees in the Risdon population in 1996 showed 69 trees with adult foliage though less than 20 of these were carrying seed. It is estimated that the number of naturally occurring reproductively mature individuals of *Eucalyptus morrisbyi* is less than 2000, with the vast majority of these in the Calverts Hill stand.

Table 1. Population summary for *Eucalyptus morrisbyi*

	Locality	1:25,000 mapsheet	Year of last census	Area (ha)	Number of adult trees
1.1	Calverts Hill Calverts Hill Nature Reserve/private land	Cremorne	1991	11.5	1915
1.2	Lumeah Point Coastal reserve with recreation lease	Cremorne	1991	0.15	16
1.3	Honeywood Drive Private land/road reserve	Cremorne	1991	0.15	12
2	Government Hills East Risdon State Reserve	Hobart	2002	0.7	81

CONSERVATION ASSESSMENT

Eucalyptus morrisbyi meets the criteria for listing as endangered on the Tasmanian *Threatened Species Protection Act 1995* because

- it is severely restricted, extending over an area of less than 500 square kilometres and occupying less than 20 hectares
- it occurs in 5 or less populations
- there is a continuing decline

It qualifies as Endangered using the 1994 IUCN (World Conservation Union) Red List criteria.

THREATS, LIMITING FACTORS AND MANAGEMENT ISSUES

Past records indicate a decline of at least 50% in the area occupied by *Eucalyptus morrisbyi* in the Cremorne area since European settlement. The decline has been largely due to clearing for agriculture and urban development. Much of the original Lumeah Point stand is likely to have been cleared because remaining trees are in a narrow coastal strip adjacent to a housing subdivision. The Honeywood Drive stand is at risk of being cleared for safety reasons as it impedes line of sight to the highway from a new subdivision's access road.

The precarious health of the Risdon population following a series of droughts, and evidence of drought stress in the lower margin of the Calverts Hill population suggest that *Eucalyptus morrisbyi* is relatively susceptible to drought. It appears that the range of the species has been retracting to wetter gullies since the last glaciation. If current climate change trends in the area continue (warmer and drier summers),

it is quite possible that the Risdon population will become extinct within the next 10 years. The mortality rate, particularly of juvenile trees and seedlings, is high following drought stress and the trees appear to become more susceptible to defoliation caused mainly by the autumn gum moth (*Mnesampela privata*). Surviving trees are weakened and flowering is compromised in following seasons. The health and seed output of the Risdon population was markedly improved following an unusually wet spring and summer in 1995/96 although subsequent drought conditions, have caused a severe deterioration in the health and survival prospects of the population.

The poor health of the Risdon population has reduced its competitive ability. In the late 1970s, a native parasitic vine, *Cassytha pubescens*, threatened to smother and kill many of the trees and was removed. The understorey of silver wattle, blackwood and prickly mimosa was thinned in October 2001 in order to further reduce competition stress on the trees.

Drought conditions and a lack of awareness in relation to serrated tussock identification and impacts, have allowed serrated tussock (*Nassella trichotoma*), a declared weed and Weed of National Significance to significantly increase in numbers, particularly over the last 2 to 3 years. It is now emerging as a significant threat to the Calverts Hill stand of *Eucalyptus morrisbyi*, where it has potential to invade recruitment niches and increase fire frequencies by significantly increasing the fuel load. There is a large population both in the forested and cleared area of the Calverts Hill Nature Reserve. A strategy for control of serrated tussock within

the reserve is now being developed.

In addition to clearing, seedling regeneration on private land has been limited by sheep and possibly rabbit grazing. The stands have also suffered from woodcutting. The bulk of the Calverts Hill stand of *Eucalyptus morrisbyi* is now in the Calverts Hill Nature Reserve, acquired through the 1999 Regional Forest Agreement (RFA) Private Land Reserve Program.

Eucalyptus morrisbyi is more or less well adapted to fire, which stimulates release of seed from capsules for regeneration. However, frequent fires will cause a decline in populations. While larger trees can resprout from lignotubers and epicormic buds, smaller trees will be killed. If the store of seed held in the canopy is not replenished in the fire-free interval, recruitment from seedlings will not replace the individuals killed. Seedlings of Morrisby's gum take approximately 10 years to produce flowers, a relatively long time for eucalypts. The small Risdon population is particularly at risk from fire as the mortality rate would be high given the poor health of trees and little seed is being produced.

Several conservation stands of *Eucalyptus morrisbyi* have been planted. Seed used in early plantings was collected from the Cremorne area. However the seed used was collected from a small number of individuals and was not representative of the genetic variation available. In addition, a relatively large number of trees planted at Lumeah Point appear to be hybrids with *Eucalyptus viminalis*. They were planted in order to supplement numbers in the stand. Recent plantings have used seed sampled from across the Calverts Hill population and from as many individuals as possible at Risdon. As well as conserving the full range of genetic variation available, these stands will provide an alternate source of seed for horticultural purposes. To avoid contamination of the Calverts Hill gene pool it is recommended that any plantings on private land do not use seed sourced from the Risdon stand or *ex situ* plantings derived from the Risdon stand.

Despite the small size of the Risdon population, variation remains high and it is not

showing signs of inbreeding problems. Although *Eucalyptus morrisbyi* hybridises with *Eucalyptus viminalis*, studies have not revealed significant contamination of its gene pool.

MANAGEMENT STRATEGY

The main objectives for the recovery of *Eucalyptus morrisbyi* are to prevent the loss or degradation of known populations and to preserve genotypic variation within the species through the establishment of *ex situ* populations.

What has been done?

Implementation of a Recovery Plan for *Eucalyptus morrisbyi* commenced in 1992. The Recovery Plan was revised in 2006. *Ex situ* plantings are being maintained by Forestry Tasmania and the University of Tasmania, School of Plant Science. A strategy for controlling serrated tussock in the Calverts Hill Nature Reserve is being prepared. Seed has been collected for long term conservation storage as part of the Tasmanian Seed Safe project set up under the Millennium Seed Bank project, conducted under the auspices of the Royal Botanic Gardens Kew (joint partners in Tasmania include DPIW, the Royal Tasmanian Botanical Gardens and the Tasmanian Herbarium). The Parks and Wildlife Service have taken action to reduce the risk of the Risdon stand being burnt by illegally lit fires. Through the efforts of Pipe Clay Coast Care Group, a number of conservation plantings have been made or are planned for private land in the vicinity of Calverts Hill using locally sourced seed (collected under permit) to address fragmentation and to establish wildlife corridors.

What is needed?

Recovery actions necessary to improve the conservation status of *Eucalyptus morrisbyi* include:

- monitor populations for threats and declines
- finalise preparation of a strategy to control serrated tussock in the Calverts Hill Nature

- Reserve and implement the strategy
- consider rehabilitating cleared areas in the Calvert's Hill and surrounding private land using seed sourced from the Calvert's Hill stand
- maintain conservation plantings
- reduce competition in the Risdon population
- consider irrigating stands to reduce drought stress
- consider culling hybrids from plantings, particularly those planted in the Lumeah Point and Honeywood Drive remnant stands (do not cut down naturally occurring hybrids)
- update the Recovery Plan and Calvert Hill Nature Reserve Management Plan regarding the serrated tussock threat
- establish a mechanism to ensure management intervention when required

Management advice

- exclude grazing to encourage seedling regeneration
- protect stands from fires, particularly if little seed is held in the canopy
- limit harvesting of wood, foliage and seed from naturally occurring stands
- consider some form of long-term protection, e.g. private nature reserve, management agreement, covenant, etc.
- consider planting *Eucalyptus morrisbyi* (using material sourced from Calvert's Hill) in your garden/on your property

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View:

<http://www.dpiw.tas.gov.au/threatenedspecieslists>

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Permit: It is an offence to collect, disturb, damage or destroy this species unless under permit.