Department of Sustainability and Environment

Action Statement

Flora and Fauna Guarantee Act 1988 No. 222

Limestone Blue Wattle

Acacia caerulescens

This Action Statement is based on a draft Recovery Plan prepared for this species by DSE under contract to the Australian Government Department of the Environment, Water, Heritage and the Arts.

Description

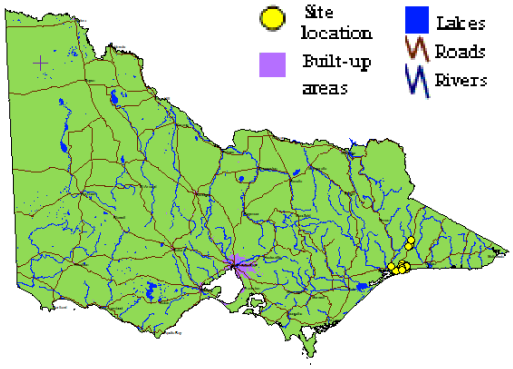
Limestone Blue Wattle (*Acacia caerulescens*) is a more-or-less pyramidal tree to 15 m tall. The phyllodes ('leaves') are obovate to oblanceolate, usually asymmetric, blue-green, and 4–8 cm long and 1.5–3 cm wide (Maslin & Court 1989; Walsh & Entwisle 1996). The phyllodes have a gland 5–25 mm above the pulvinus (swelling at base of phyllode) connected by a fine, oblique vein (Walsh & Entwisle 1996). Flowering occurs in November – December. The flowers are clustered into globular, pale yellow heads, to 6 mm wide, which are arranged in short racemes or panicles arising from the leaf axils (DNRE 2001). The fruit is a more-or-less straight, oblong pod, 5–12 cm long and 12–22 mm wide, which is sometimes constricted between the seeds (Walsh & Entwisle 1996; DNRE 2001).

This species is closely related to Mountain Hickory Wattle (*Acacia obliquinervia*). The phyllodes of Mountain Hickory Wattle, however, are less glaucous and often longer, and the gland is 0-12 mm above the pulvinus (Maslin & Court 1989). Mountain Hickory Wattle also lacks an associated fine, oblique vein extending to the pulvinus, and has bright yellow flower heads. Furthermore, it has much smaller secondary branching and different bark (B. Peel pers. obs.). Mountain Hickory Wattle is much more widespread than Limestone Blue Wattle, and occurs at higher altitudes (Walsh & Entwisle 1996). Limestone Blue Wattle is restricted to limestone soils whereas Mountain Hickory Wattle is never found on limestone (B. Peel pers. obs.).

Distribution

Limestone Blue Wattle is endemic to eastern Victoria, within an area approximately bounded by Buchan, Lake Tyers and Bairnsdale, where it is

Limestone Blue Wattle
(Photo: DSE/Cameron)



Distribution in Victoria
(Flora Information System DSE 2007)

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restricted to limestone soils (Maslin & Court 1989). Populations currently occur in a variety of geographic situations, close to roads, rivers, lakes or tracks, wherever there are limestone outcrops, and where fire frequency is less frequent and less intense. Limestone Blue Wattle is also cultivated and sometimes grown in Victoria (Tame 1992). Extensive planting has occurred within Buchan Caves Reserve at a distance from natural populations at that site.

Abundance

It is estimated that approximately 1700 individuals exist, based on personal observations by N. Walsh in December 2002. These plants occur in 15 populations. It is not known whether this species was formerly more widespread, but several populations recorded on DSE's Flora Information System database have not been recently confirmed. Populations have been fragmented and depleted historically by land clearance for settlement and agriculture (Maslin & Court 1989), and by weed invasion around the lower Mitchell, Nicholson, Tambo Rivers and the Gippsland Lakes by Bridal Creeper (*Asparagus asparagoides*), Blue Periwinkle (*Vinca major*) and Cape Ivy (*Delairea odorata*).

Important populations

Important populations necessary to the long term survival and recovery of Limestone Blue Wattle occur as follows:

- Roadsides managed by VicRoads: Buchan - Gelantipy Road and Princes Highway at Toorloo Arm.
- Private land at Calulu and North Arm, Lakes Entrance.
- Reserves managed by Parks Victoria: Buchan Caves, Anticline Reserve at Murrindal and Lake Tyers Forest Park.
- Land owned by the Shire of East Gippsland and private land near Tambo River below Tambo Upper.
- River frontages on the Mitchell, Nicholson and Tambo Rivers, and around Lake Bunga and Bunga Creek.

Habitat

Limestone Blue Wattle occurs in a range of vegetation types with the common characteristic of underlying limestone geology. In some areas, Limestone Blue Wattle occurs on clay over limestone in *Eucalyptus* woodland (i.e. Limestone Grassy Woodland *sensu* Woodgate *et. al.* 1993) and forest (Walsh & Entwisle 1996). Limestone Blue Wattle is also found in Limestone Pomaderris (*Pomaderris oraria* subsp *calcicola*) shrubland (*sensu* Peel 1993), Coast Grey-box (*Eucalyptus bosistoana*) open forest (Limestone Box Forest *sensu* Woodgate *et. al.* 1993), and sub-coastal shrublands. Some key associated species include Sticky Hop-bush (*Dodonaea viscosa*), Lightwood (*Acacia implexa*), Tree Violet (*Hymenanthera dentate*), Kangaroo Apple (*Solanum aviculare*), Forest Clematis (*Clematis glycinoides*), Seaberry Saltbush (*Rhagodia candolleana*) and Blanket-leaf (*Bedfordia arborescens*). At some sites, the vegetation merges towards Lilly Pilly (*Acmena smithii*) Warm Temperate Rainforest. Populations at Buchan are associated with Yellow Box (*Eucalyptus melliodora*), Large-leaf Hickory-Wattle (*Acacia falciformis*) and Kangaroo Grass (*Themeda triandra*), forming grassy woodlands (Maslin & Court 1989; or Limestone Grassy Woodland *sensu* Woodgate *et al.* 1993). At Murrindal, and probably in the past in the Buchan Valley, the vegetation is East Gippsland Karst Dry Rainforest (Peel 1999). Limestone Blue Wattle is also present as a secondary species in at least one community of Littoral Rainforest, restricted to the North Arm of the Gippsland Lakes and Lake Tyers, and probably in the past on the lower Mitchell, Nicholson and Tambo Rivers (Peel in prep.). In this community, Limestone Blue Wattle fulfils the same ecological function as Blackwood (*Acacia melanoxylon*) in Warm Temperate Rainforest in East Gippsland.

Life history and ecology

Limestone Blue Wattle germinates after disturbances associated with fire, roadworks, landslip and smaller scale disturbances. Like Blackwood, it probably also germinates in small numbers in the absence of disturbance. In Dry and Littoral Rainforests, this probably leads to its germination and establishment in small rainforest gaps (Peel in prep.). Plants are apparently long-lived: surveys by N. Walsh in 2002 found no evidence of senescing trees. Many sites containing Limestone Blue Wattle are riparian and subject to weed invasion. More open sites (e.g. Buchan Caves reserve) may have little chance of recruitment due to very high numbers of kangaroos and rabbits. This species is also extremely vulnerable to attack by feral deer: both browsing and antler damage have been noted (B. Peel pers. comm..).

Conservation status

National conservation status

Limestone Blue Wattle has been listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*

Victorian conservation status

Limestone Blue Wattle has been listed as threatened under the *Flora and Fauna Guarantee Act 1988.*

Limestone Blue Wattle is considered vulnerable in Victoria according to DSE's *Advisory List of Rare or Threatened Plants in Victoria – 2005* (DSE 2005).

Potentially threatening processes

Weed invasion

Many sites containing Limestone Blue Wattle are riparian and subject to weed invasion. Notable weeds include Bridal Creeper (*Asparagus asparagoides*), Cape Ivy (*Delairea odorata*), Blue Periwinkle (*Vinca major*), Great Mullein (*Verbascum thapsus* subsp. *thapsus*), Horehound (*Marrubium vulgare*) and Blackberry (*Rubus fruticosus* spp. agg.). Bridal Creeper and Blackberry are Weeds of National Significance.

Browsing

More open sites (e.g. Buchan Caves Reserve and private land sites) may have little chance of recruitment due to very high kangaroo and/or rabbit numbers. Grazing by cattle, sheep, feral and domestic goats, and horses has been observed to be a threat to the natural regeneration of the species and in areas of revegetation. Other more remote areas are at severe risk from Sambar Deer (*Cervus unicolor)* and Hog Deer (*Axis porcinus*) (Peel et al. 2004).

Habitat loss

Four sites are in reserves managed by Parks Victoria. However, much greater legal protection, formal security and management for conservation purposes are required. Unless reservation is implemented, sites on private land continue to be threatened by land clearing (which has historically destroyed many populations).

Trampling

Anglers' foot tracks have been observed at lakeside populations – trampling of seedlings may occur.

Small patch size

Many populations of this species occur in small fragments of vegetation. In the long term, all functional community processes may not be operable at theses sites.

Inappropriate biomass reduction / fire regimes – lack of recruitment

Cues for germination are unknown; any requirement for high temperatures for seed germination, such as fire, should be investigated.

Road widening / Roadworks

The Tambo Upper Road cutting site may be threatened by road widening in the future. The Buchan-Gelantipy Road may be threatened by road works. Recent works, however, have permitted recruitment through soil disturbance at this site. In the late 1980s, major road widening operations significantly reduced roadside populations between Buchan and Murrindal.

Previous management action

- Recorded locations have been documented onto Flora Information System and VROTPop databases.
- Roadside locations have been included on shire and VicRoads roadside management plans.
- Roadside and private land locations have been marked on Shire Planning Schemes through an Environmental Protection overlay.
- The roadside population on Buchan-Gelantipy Roads was burnt about five years ago. This caused good germination and the population has now approximately doubled.

Long term objective

To ensure that Limestone Blue Wattle can survive, flourish and retain its potential for evolutionary development in the wild.

Specific objectives, actions and targets

The intended management actions listed below are further elaborated in DSE's Actions for Biodiversity Conservation (ABC) system. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

Objective I To increase knowledge of biology, ecology and management requirements

Action	*Targets*	*Responsible*
1. Acquire baseline population data by conducting detailed field and desk top surveys including identification of the area and extent of the population; estimates of the number, size and structure of the population; and inference or estimation of population change.	▪ Updated records on all state databases (Flora Information System, VROTPop and Herbarium). ▪ Populations accurately mapped.	DSE, Parks Victoria
2. Assess habitat characteristics and/or condition. Accurately survey known habitat, and collect and analyse floristic and	▪ Ecological requirements identified for the completion of essential life history stages, recruitment and dispersal.	DSE, Parks Victoria

	environmental information relevant to community ecology and condition.	▪ Core habitat mapped.	
3.	Conduct survey to locate suitable habitat. Identify and survey potential / historical habitat using ecological and bioclimatic information that may indicate habitat preference.	▪ Predictive model for potential habitat developed and tested.	DSE, Parks Victoria
4.	Identify disturbance regimes to maintain habitat or promote regeneration and recruitment.	▪ Preparation of management prescriptions for ecological burning at Toorloo Arm Road, east of Toorloo Arm sites and others if feasible.	DSE, Parks Victoria
5.	Undertake research to identify key biological functions. Evaluate current reproductive / regenerative status, seed bank status and longevity, fecundity, and recruitment levels by conducting field based experimental trials. Determine seed germination requirements by conducting laboratory and field trials aimed to identify key stimuli.	▪ Seed bank/regenerative potential quantified for target populations. ▪ Stimuli for recruitment/regeneration identified. ▪ Management strategies identified to maintain, enhance or restore regenerative processes fundamental to reproduction and survival.	DSE, Royal Botanic Gardens
6.	Analyse population trends. Measure population trends and responses against recovery actions by collecting demographic information including recruitment and mortality, timing of life history stages and morphological data. Collate, analyse and report on census data and compare with management histories.	▪ Techniques for monitoring developed and implemented. ▪ Census data for target populations collected. ▪ Population growth rates determined. ▪ Population Viability Analysis completed for targeted populations.	DSE

Objective II **To secure populations or habitat from potentially incompatible land use or catastrophic loss.**

Action	*Targets*	*Responsible*
7. Negotiate Memorandum of Understanding or appropriate management agreement for public land.	▪ Formal protection of all Limestone Blue Wattle populations on public land.	DSE
8. Liaise with private landholders. Ensure that information and advice about the recovery of Limestone Blue Wattle has been provided to private land managers and landholders.	▪ All relevant private land managers are aware of the species and its management needs.	DSE
9. Negotiate voluntary conservation agreements with private landholders. Identify key private land sites and approach owners regarding conservation agreements.	▪ Conservation agreements negotiated with landholders for all key populations on private land.	DSE
10. Erect/maintain signs to restrict or discourage access. Control accidental destruction by installing appropriate signage.	▪ Measurable seedling recruitment and a reduction in plant mortality at Buchan Caves Reserve (Fairy Cave entrance) and Toorloo Arm Road, east of Toorloo Arm Buchan-Gelantipy Road and the three Lake Tyers sites.	DSE, Parks Victoria

11. Liaise with government agencies. Ensure that information and advice about the recovery of Limestone Blue Wattle has been provided to public land managers, local government authorities and Catchment Management Authorities.	▪ All relevant authorities and public land managers are aware of the species and its management needs.	DSE

Objective III To improve the condition of habitat

Action	*Targets*	*Responsible*
12. Manage environmental weeds. Control threats from pest plants using careful application of herbicide or hand removal of weeds.	▪ Measurable seedling recruitment and a reduction in plant mortality at Buchan Caves Reserve (Fairy Cave entrance) and Toorloo Arm Road, east of Toorloo Arm Buchan-Gelantipy Road and the three Lake Tyers sites.	DSE, Parks Victoria

Objective IV To increase the number of populations or individuals

Action	*Targets*	*Responsible*
13. Store reproductive material. Establish a seed bank.	▪ Long-term storage facility identified. ▪ Seed from target populations in storage.	DSE, Royal Botanic Gardens
14. Determine seed viability.	▪ Seed viability determined.	Royal Botanic Gardens
15. Establish and maintain a reintroduced / translocated population. Encourage and support community-based replanting programs for Limestone Blue Wattle.	▪ Five secure, viable populations (>100 individuals) established.	DSE, Parks Victoria, East Gippsland CMA

Objective V To increase community awareness and support

Action	*Targets*	*Responsible*
16. Involve community groups and volunteers in recovery activities.	▪ Opportunities for involvement identified, promoted and supported.	DSE

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