

Flora & Fauna Guarantee Action Statement

#23

This Action Statement was first published in 1992 and remains current. This version has been prepared for web publication. It retains the original text of the action statement, although contact information, the distribution map and the illustration may have been updated.

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Limestone Caladenia *Caladenia calcicola*



Limestone Caladenia (*Caladenia calcicola*)
(Illustration by G. Carr)



Distribution in Victoria (DSE 2002)

Description and Distribution

The Limestone Caladenia (*Caladenia calcicola* G. W. Carr), a spider orchid, bears one or two glossy pale yellow flowers about 35 mm across with deep red central stripes. The sepals end in prominent yellow to reddish clubs about 6 mm long. The erect stem, up to 28 cm high, arises from a single leaf up to 15 cm long and 1.5 cm wide, densely hairy on both surfaces and red-spotted at the base. The plant produces leaves from a tuber and flowers from mid September to early November. A full description can be found in Carr (1986) and Jones (1988).

The Limestone Caladenia is endemic to south-western Victoria, where it grows in open forest on shallow sandy soils overlying low limestone ridges. The species is known from limestone ridges over an area of about 10 km² centred on Bats Ridge Wildlife Reserve. It was also known from private property at Cashmore, several kilometres to the east of Bats Ridge Wildlife Reserve.

Conservation Status

Current Status

Gullan *et al.* (1990) Vulnerable

An acknowledged authority on the *Caladenia* genus consulted by the SAC considers *C. calcicola* to be one of the rarest and most restricted members of the genus. (SAC 1991) The Limestone Caladenia is listed as a threatened taxon in Schedule 2 of the *Flora and Fauna Guarantee Act* 1988.

Reasons for Conservation Status

The distribution of this species is limited to an area of 10 km² centred on the Bats Ridge Wildlife Reserve. The number of plants located within this area is very low and the numbers observed since 1989 have been decreasing. The exact size and number of populations, while uncertain, is considered to be small, with only three currently thought to exist. The species is no longer found in one of the freehold sites from which it was recorded prior to 1950 (DCE Flora Information System). The previously largest known population, found on private land adjacent to Bats Ridge Wildlife Reserve, was almost entirely destroyed by quarrying between 1980 and 1984 (Carr 1986). Surveys in 1990 and 1991 failed to relocate the remnants of this population. It is possible that suitable habitat may occur in Lower Glenelg National Park, to the west of Bats Ridge Wildlife Reserve.

Remaining populations in Bats Ridge Wildlife Reserve and the adjacent freehold land may be threatened by pest plant invasion particularly the invasion of the area by Coast Wattle (*Acacia sophorae*), which is dominating areas to the exclusion of other species. In the past, grazing by stock, and currently by Rabbits, has reduced the numbers of plants at known locations. An absence of fire in the reserve has led to a relatively high fuel load and therefore a greater risk of wildfire, which could have a detrimental effect on the flora of the reserve. There is also evidence that some illegal collection is occurring.

In its final recommendations, the Scientific Advisory Committee (1991) has determined that the Limestone Caladenia is:

- in a demonstrable state of decline which is likely to result in extinction;
- significantly prone to future threats which are likely to result in extinction; and
- very rare in terms of abundance or distribution.

Major Conservation Objectives

- To maintain current population levels of the Limestone Caladenia, and encourage the expansion of these populations through appropriate management strategies.
- To improve our understanding of the population status and ecological requirements of the Limestone Caladenia and use this information to improve proposed management strategies.

Management Issues

Ecological Issues Specific to the Taxon

According to Carr (1986), the species appears to be restricted to fairly open habitat on limestone ridges with a thin, sandy, well-drained soil, and is the only species of spider orchid (*Caladenia* section *Calonema*) found in this habitat. Preferred aspect and topographical position (i.e. ridge, upper or mid-slope) have not been documented.

No counts have been made of individual plants within the known populations, and the location and extent of those recorded is poorly documented. No studies of the level of seedling establishment or recruitment into the populations have been made.

Pollination is thought to be carried out by a thynnid wasp (*Tiphiidae: Thynninae*) as described for other *Caladenia* Section *Calonema* species. The ecological requirements of the pollinator are also unknown. Observations by Carr (1986) suggest that between 5% and 10% of plants are pollinated annually.

The importance of fire in promoting flowering and providing a suitable medium for seedling establishment is unclear. The removal of canopy cover through fire may not contribute to seedling establishment, as the habitat of the species is naturally open, due to the poor skeletal soils and outcropping limestone. Flowering in many species of *Caladenia* is stimulated by summer fire (Jones 1988). However, fire is not essential for flowering to occur.

Processes and activities which may threaten populations include:

- grazing by invertebrates and rabbits;
- the extension of quarrying activities and the dumping of overburden;
- unsuitable fire regime;
- pest plant invasion;
- illegal removal of plants; and
- unsuitable disturbance regime.

Coast Wattle invasion may pose a threat to the habitat of the Limestone Caladenia. This environmental weed, while indigenous to a narrow coastal strip, has dominated areas of heath and open forest inland from the coast to the apparent detriment of the ground flora. This species has been a concern in south-eastern South Australia, where it has invaded farmland and roadsides (Cohen 1981).

Wider Conservation Issues

Management actions that maintain the Limestone Caladenia's open habitat at Bats Ridge Wildlife Reserve, such as Coast Wattle control, will benefit other groundstorey plant species that require an open habitat.

Five plant species considered rare, endangered or locally significant occur within Bats Ridge Wildlife Reserve.

Management actions aimed at securing populations of the Limestone Caladenia should be designed to minimise any adverse effects on these other species.

Fauna in the reserve may benefit from mosaic burning that produces a diversity of habitat. For example, species such as

the Heath Mouse (*Pseudomys shortridgei*) rely on areas of heath regrowth to provide suitable habitat.

Social and Economic Issues

Management activities within Bats Ridge Wildlife Reserve will have a positive effect on recreational opportunities for speleologists, bird observers and field naturalists. For example, management actions aimed at conserving the orchid will also enhance the area for other species of flora and fauna. A more diverse habitat will increase species diversity and provide greater opportunities for nature observation. Other advantages would come in the form of improved access to sections of the reserve, and greater information for walkers, which will also assist in protecting known sites.

The major effects of conserving the orchids on private land has been on limestone quarrying for road-making, in the Shire of Heywood. Between 1980 and 1984 the largest population was largely destroyed by a quarrying operation on freehold land. Extension of the quarry into the area containing the remaining population at this site was halted following a voluntary agreement between the Shire of Heywood and the DCE.

The loss of a proportion of the available limestone at this site for road making material will not, in the medium term, affect the ability of the Shire of Heywood to undertake works. In the long term, as other limestone areas are exhausted, this may become an issue. Therefore, it is important to be aware of this potential, though minor, conflict.

Further sites with Limestone Caladenia may well be found in the future; the implications for land use are not likely to be great. Any sites will most likely to be on public land, where most of the limestone ridges are found. Locating and protecting any sites on private land will depend on landholder cooperation.

If found, sites on private land would require protection from grazing, particularly during the summer flowering period, and also effective pest plant and animal control. Landholders would be unlikely to find these measures a problem since the ridges generally offer very poor grazing. Many landholders already fence out the limestone ridge areas to provide windbreaks and to minimise chances of stock falling into caves. Removal of grazing may, in fact, contribute to the re-appearance of the species.

There is little active fire prevention undertaken in the area at present. Consequently, autumn burns aimed at enhancing Limestone Caladenia habitat should be acceptable by the local community, although some concern has been expressed by local conservation groups.

Illegal orchid collection is suspected of having severely damaged one Limestone Caladenia site. The preparedness of some orchid collectors to remove plants from wild populations is a serious problem. Many populations of threatened orchids suffer from this problem and therefore a state-wide approach is necessary to deal with it. It is predominantly the result of an attitude to rare plants in the wild and a coordinated education program is required if this social attitude is to be addressed.

Management Action

Previous Management Actions

A voluntary agreement was reached in 1988 between the Shire of Heywood and DCE to halt further expansion of quarry operations into the Limestone Caladenia population remaining at the quarry site adjacent to the Reserve. Previous quarrying had destroyed most of the population. The area was pegged out on 12 October 1988. The agreement was formalised by amending the Ministry for Planning and Housing Permit No.10900R, dated 2 April 1987.

Staff from the Portland Region visited two of the orchid populations during the flowering seasons of 1989, 1990 and 1991. Despite extensive searching, the population on private property adjacent to the quarry could not be found in either 1990 or 1991.

During autumn 1992 approximately 80 ha of Bats Ridge Wildlife Reserve was mosaic burnt for habitat management. Specific aims included the reduction of Coast Wattle dominance in certain areas, the reduction of canopy closure, and the lowering of fuel loads for fire protection. This is thought to improve the habitat for the species and to promote flowering at those sites where orchids persist.

Intended Management Action

Survey

Locate previously recorded populations of Limestone Caladenia on public and private land, commencing during the orchid's flowering season in 1992.

Assess current population status and record the environmental parameters for each population located, both within Bats Ridge Wildlife Reserve and on private property, commencing in the 1992 flowering season.

Systematically survey burnt habitat for populations of the Limestone Caladenia.

Register all survey data on the Victorian Rare or Threatened Plant Database.

Monitoring

Monitor known populations annually, recording numbers and condition of adult and juvenile plants, and the amount of seedling recruitment and pollination success. Monitoring is to commence when the orchid flowers in Spring 1992.

Monitor the number and cover abundance of exotic and environmental weed species in and adjacent to populations of the orchid. Monitoring is to commence in Spring 1992.

Assess the effects of physical disturbance on the survival of the species.

Register all monitoring data on the Victorian Rare or Threatened Plant Database.

Research

Encourage research into the ecological requirements of the Limestone Caladenia, including:

- the confirmation of the orchid's pollinator and the pollinator's habitat requirements;
- response of the orchid to fire;

- genetic variability within the population and likely minimum viable population size;
- identification of the requirements for seedling establishment of the species eg. physical disturbance of the seedbed; and
- establish control areas for comparison.

Habitat Works

Assess the needs and requirements for protecting populations of the Limestone Caladenia on private property. This could include excluding stock and rabbit grazing, and controlling pest plants.

Construct a fence around the remnant vegetation and orchid population, adjacent to the Shire of Heywood quarry, to prevent accidental encroachment and to discourage illegal collection. This will be completed before spring 1992.

Carry out mosaic burning within Bats Ridge Wildlife Reserve to:

- maintain an open habitat;
- control weed invasion, particularly Coast Wattle; and
- stimulate flowering and encourage seedling establishment if research and monitoring indicates this is an appropriate management strategy.

Undertake a critical habitat determination.

Liaison

Encourage landholders who find populations of the Limestone Caladenia on their property to place the area under a conservation covenant and provide incentives where appropriate.

Negotiate a Public Authority Management Agreement under Section 25 of the *Flora and Fauna Guarantee Act 1988* with the Shire of Heywood. This would aim to permanently exclude quarrying activities from orchid sites adjacent to their existing quarry and ensure sympathetic rehabilitation and future management.

Encourage local conservation groups to participate in the conservation of the species through the 'Adopt a Plant' Scheme.

Ex situ conservation

Encourage research by suitable institutions into methods for the *ex situ* propagation of the orchid in case such action is required for the conservation of the species.

Assess the requirement for the *ex-situ* conservation of the orchid if annual monitoring reveals a sustained decline in population numbers. A preliminary assessment is to be made following monitoring in spring 1993.

If *ex situ* propagation is considered necessary then the species should become a part of the Royal Botanic Gardens' orchid propagation program. This will require a clear plan of action that identifies the role of the program in the conservation of this orchid, and a program of habitat restoration and protection. The aim must be to return the species to the wild within three years.

Other Desirable Management Actions

Search other areas of suitable habitat within Bats Ridge Wildlife Reserve and on private property for populations of Limestone Caladenia.

Initiate a broadscale, statewide education program identifying the threats posed to remnant and threatened populations by illegal collection.

Legislative Powers Operating

Legislation

Flora and Fauna Guarantee Act 1988: provides for protected flora controls and the protection of critical habitat if so designated.

Crown Land (Reserves) Act 1978: Bats Ridge Wildlife Reserve proclaimed under Section 4.

Extractive Industries Act 1966: controls quarrying activities and provides for DCE input into licence conditions.

Planning and Environment Act 1987: regulates private land use.

Licence/Permit Conditions

Permit conditions recommended by DCE and pertaining to quarrying activities carried out by the Shire of Heywood include:

- the control of pest plants in adjacent areas of native vegetation;
- no vegetation shall be removed or disturbed outside the area used for extraction; and
- no extraction to take place and no plant or product stockpiles are to be located within 20 metres of the boundary of the allotment.

Permits for taking under the *Flora and Fauna Guarantee Act (1988)* will not be issued.

Consultation

The Shire of Heywood and the Western Victorian Conservation Committee have been consulted in the preparation of this Action Statement.

Implementation, Evaluation and Review

The Regional Manager, Portland, is responsible for coordinating the implementation of this Action Statement. The Flora and Fauna Guarantee Officer in Portland Region will monitor the implementation of management actions and evaluate their effectiveness in meeting the stated objectives. Management actions will be reviewed annually. Due to the limited current knowledge of the taxon's population dynamics, modifications to the management program may become necessary as population monitoring progresses. This Action Statement will be reviewed in 1995.

Contacts

Management

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Further information

Further information can be obtained from Department of Sustainability and Environment Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website:
<http://www.dse.vic.gov.au>

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Personal Communications

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