

THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

The Minister's delegate approved this Conservation Advice on 01/04/2016.

Conservation Advice

Lobelia gelida

snow pratia

Conservation Status

Lobelia gelida (snow pratia) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act). The species is eligible for listing as prior to the commencement of the EPBC Act, it was listed as Vulnerable/Endangered/Critically Endangered under Schedule 1 of the *Endangered Species Protection Act 1992* (Cwlth).

The main factors that are the cause of the species being eligible for listing in the Vulnerable category are that it has a:

- small population size of less than 3000 individuals,
- limited extent of occurrence
- limited area of occupancy, and
- fragmented distribution.

Description

The snow pratia is a creeping, mat-forming prostrate perennial herb often producing roots from stem nodes. Leaves are linear lanceolate to narrowly elliptic, to 18 mm long, with margins that are entire or slightly notched. Leaf bases narrow gradually and leaves attach alternately to stems directly or they may have petioles to 1 mm long. Leaf surfaces are smooth and glossy, with the upper surface darker green than the lower surface (Carter and Walsh 2006).

Small white to faint lilac, fan-shaped flowers are produced at irregular intervals along the stems on pedicels 0.5–3 mm long. The five petals are 3–4 mm long and are united at the base into a tube c. 2 mm long that is deeply slit along the upper side. The five calyx lobes are 1–1.8 mm long. The five anthers are united into a tube, with the lower pair of anthers both tipped by a short bristle. Fruits are fleshy, nearly spherical and 1.5–2.5 mm long. Flowers appear in November and December, while fruits develop from January to April (Walsh & Entwisle 1999). The narrow shiny leaves *L. gelida* from other alpine or subalpine *Lobelia* species, particularly *L. surrepens* with which it often occurs. Little else is known of the biology or ecology of this species (Carter and Walsh 2006).

Distribution

The snow pratia is endemic to the highlands of eastern Victoria, where it is has been found in only two areas, on Mount Reynard in the Alpine National Park and in Mount Buffalo National Park, at 1300–1700 m above sea level. The species occurs in the South-eastern Highlands IBRA Bioregion (DSEWPaC 2012).

The snow pratia is known only from two widely separated locations in the alps of eastern Victoria. In 2006, there were six known populations of snow pratia containing 1500–3000 plants. Accurate estimations of abundance are difficult because plants are rhizomatous and mat forming, and it is often difficult distinguishing individual plants. All populations occur within the

Alpine National Park (Wonnangatta-Moroka unit) or Mount Buffalo National Park. Table 1 lists the locations of important populations necessary for the long term survival and recovery of the species (Carter and Walsh 2006).

Table 1 – Important populations.

Location	Estimated population size / comments (DSE 2006)
Alpine National Park	
Mount Reynard	Plants occur in 17 ephemeral pools ranging in size from 2–20 m ² within an area of 2 ha.
Mount Buffalo National Park	
Hospice Plain	1000 plants in numerous patches
Bogong Plain	10–50
Wirbill Plain	500–1000
Blackfellows Plain	10–50 plants in two patches
Skeleton Gully	20

The snow pratia occurs in seasonally inundated depressions within grassland or heathland. At Mount Reynard, associated species include the Dwarf Buttercup (*Ranunculus millanii*), White Purslane (*Neopaxia australasica*), Alpine Blown-grass (*Lachnagrostis meionectes*) and the exotic *Acetosella vulgaris* (Sorrel). This population occurs on fine blackish silt soils that crack in summer, at 1680 m above sea level (Carter and Walsh 2006).

The Mount Buffalo populations occur with bog snow-grass (*Poa costiniana*), blue snow-grass (*Poa phillipsiana*), candle heath (*Richea continentis*), granite buttercup (*Ranunculus graniticola*), spreading rope-rush (*Empodisma minus*), delicate bush-pea (*Pultenaea tenella*), coral heath (*Epacris gunnii*), mud pratia, slender snow-daisy (*Celmisia pugioniformis*), mountain club-sedge (*Isolepis montivaga*) and/or with the juniper haircap moss (*Polytrichum juniperinum*). These populations occur on silty alluvium peat soil, at altitudes of 1310–1510 m above sea level (Carter and Walsh 2006).

Relevant Biology/Ecology

Little is known about the biology or ecology of the snow pratia. Given this species' mat-forming, rhizomatous habit, plants may be easily damaged by herbivore grazing or human trampling. A small number of plants from both Mount Buffalo and Mount Reynard populations are currently maintained at the Royal Botanic Gardens Melbourne.

Observations of the recovery of populations following the wildfire in the Victorian Alps in 2003 suggest that the snow pratia is not highly susceptible to wildfire. Areas on Mount Buffalo in which the species occurs were extensively incinerated during the fire. However, patches of the species in those affected areas were observed to have been scorched by the fire and resprouting was occurring. Given that the species grows in wet pools or depressions in the alpine plains, where vegetative fuels are less flammable or available to a passing fire, it was deduced that the species is likely to be mostly protected from the full intensity of fires. While the aboveground stems and leaves may be scorched by a fire's radiant heat, the underground rhizomes are likely to remain largely unaffected (Walsh cited in DSE 2008).

Threats

Table 2 – Threats impacting the snow pratia in approximate order of severity of risk, based on available evidence.

Threat factor	Threat type	Threat status	Evidence base
Habitat loss disturbance and modifications			
Sedimentation	known	current	Upper part of the Hospice Plain population below Reservoir Track is prone to being covered by gravel eroded by heavy rainfall and transported down slope in water run-off from the track.
Trampling	potential	current	With its low, mat-forming, rhizomatous habit, the species is easily damaged by human trampling. Recreational bushwalkers and cross country skiers regularly visit areas near the populations on Mt. Reynard and on the Bogong Plains and Wirbill Plains in Mt. Buffalo NP and plants may be accidentally damaged or destroyed through trampling.
Road/bridge maintenance	potential	current	The Bogong Plain population in Mt. Buffalo NP is exposed to a moderate potential threat of inadvertent damage through bridge repair or modification.
Invasive species			
Weed invasion	potential	current	The <i>Agrostis capillaris</i> (brown-top bent) has been observed growing in close proximity to the population at Blackfellows Plain in Mt. Buffalo NP. Weed invasion could have a major influence on survival of some populations. There is a risk that bushwalkers may introduce weeds, such as English broom (<i>Cytisus scoparius</i>), by transporting seeds attached to their shoes.
Domestic Stock			
Cattle grazing	known	past	Trampling by cattle was known but has not been a problem since cattle-grazing was removed in 1992.
Effects on the species and its environment as a result of climate change			
Global climate change	known	potential	It is predicted that climate change will have a significant effect on alpine plant diversity and on the structure and function of many alpine plant communities by impacting upon their physiology and timing of life cycles, and on their interactions with other species. This will subsequently lead to the redistribution of alpine plant communities and changes in their structure and composition (ANBG, 2009).

Conservation Actions

Conservation and Management priorities

Habitat loss disturbance and modifications

- Develop and implement an erosion and sediment control plan for the Hospice Plain population in Mount Buffalo National Park to minimise erosion of the Reservoir Track and prevent sedimentation of the snow pratia population down slope.
- An erosion and sediment control plan for the Hospice Plain population should require the:
 - installation of additional culverts at the Reservoir Track and replace existing culverts where required to minimise water flowing over the track, particularly during and after heavy rainfall,
 - regular checking and maintenance of all culverts and drains including during or after heavy rainfall,
 - construction of sediment traps in Crystal Brook, where required, and checking and cleaning them out regularly to ensure they are working effectively, and
 - re-sheeting Reservoir Track with coarse gravel and maintaining as required.
- Install and maintain signage, which indicates the occurrence of populations and the importance of avoiding damage to them or their habitats, at all known sites.
- Where an actual threat of trampling of a population by bushwalkers is detected, realign tracks and roads or install and maintain fencing to minimise the risk of plants being damaged or destroyed.
- Continue to prevent accidental damage to populations of snow pratia from track or bridge construction or maintenance works by installing and maintaining signage, which indicates the occurrence of populations and the importance of avoiding damage to them or their habitats.
- Rehabilitate vegetation communities and/or environments where populations are substantially damaged by track or bridge construction or maintenance works or by bushwalkers.

Weed invasion

- Develop and implement a weed management plan to regularly suppress weed growth and regenerate populations of snow pratia and their habitats where necessary, using techniques determined through scientific research. Incorporate post-fire monitoring and ensure that post-fire control actions are conducted.
- Control weeds by hand removal or applying herbicide during calm, near windless weather conditions in order to minimise the potential for harmful sprays to be wind-dispersed and adversely affect populations or the surrounding native vegetation.
- Annual weed spraying will be much more effective if action can be taken to reduce the influx of new weed seed each year in consultation with land managers.
- Continue to record the method, timing and success of weed control treatment and the effect on the species and associated native plant species.

Climate change

- Continue to collect and store seed from known populations to maintain adequate representation of the remaining genetic diversity from known populations of the species for the potential future restoration of populations and translocations.
- Establish and maintain a long-term storage facility to store seed.
- Cultivate plants ex situ to facilitate assisted/migration range shifts in response to climate change.
- Cultivate plants ex situ to facilitate the expansion of populations with low numbers.

Stakeholder Engagement

- Promote, support and identify opportunities for the involvement of community groups and volunteers in recovery activities for the species.
- Ensure that advice about the recovery and management requirements of the species has been provided to road and bridge construction and maintenance organisations, including contractors, and that they are aware of the species' occurrence and implement measures to avoid damaging populations of the species.
- Continue to update community information materials (e.g. electronic media, local media, and poster displays and printed information sheets distributed through local government libraries, letterbox drops, wildflower shows and other events) about the species (e.g. its visual appearance, habitat, threats to the species and recovery actions) and the importance of locating, monitoring and protecting populations over the long-term.

Survey and monitoring priorities

- Continue to monitor known populations of the snow pratia and their habitats and collect demographic information, including recruitment and mortality, timing of life history stages and morphological data, and floristic and environmental information relevant to community ecology and condition.
- Continue to survey suitable habitat within the distribution of the snow pratia to locate any additional populations of the snow pratia and identify suitable locations for establishing new populations. Use existing Parks Victoria monitoring data from the five Mount Buffalo sites since 1998.
- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Review all known population locations to make sure there is no duplication (e.g. due to different GPS readings) and update records on all state databases (Flora Information System, Victorian Biodiversity Atlas, Biosites and Herbaria).
- Research key biological functions of the species. Evaluate essential life-history stages, current reproductive/ regenerative status, seed bank status and longevity, fecundity, recruitment levels and mechanisms for recruitment and dispersal.
- Research and assess the ecological requirements of the species in order to address the threat of climate change.

- Conduct laboratory and field trials to identify the key stimuli and requirements for successful seed germination and vegetative propagation and cultivation. Develop management strategies to maintain, enhance or restore regenerative processes fundamental to reproduction and survival of populations.
- Measure population trends and responses against recovery actions. Collate and analyse census data, compare with management histories and conduct population viability analyses.

References cited in the advice

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