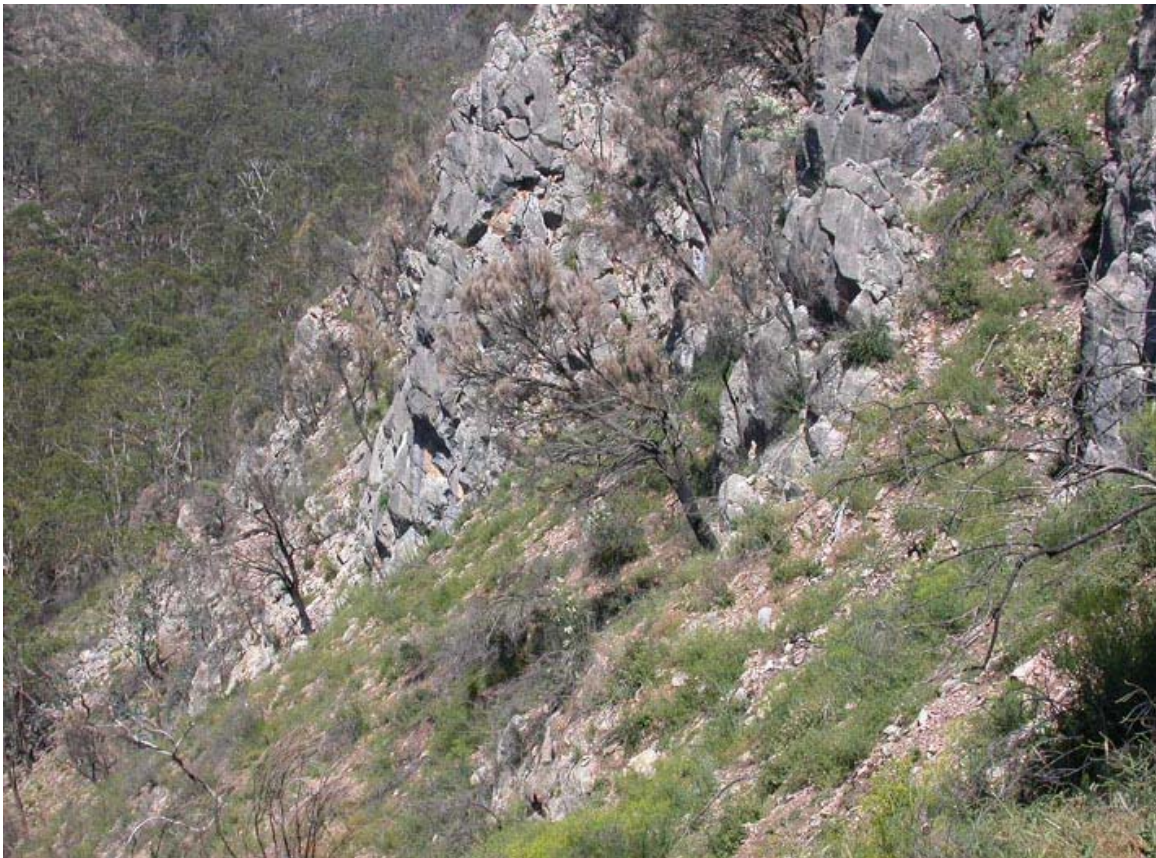


National Recovery Plan for the Endangered Ecological Community

Silurian Limestone Pomaderris Shrubland of the South East Corner and Australian Alps Bioregions

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Australian Government



Department of
Sustainability
and Environment

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Cover photograph: Silurian Limestone Pomaderris Shrubland community at Marble Gully, Victoria. photo by Neville Walsh

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Summary

Silurian Limestone Pomaderris Shrubland of the South East Corner and Australian Alps Bioregions is an ecological community known from a single site of about 40 ha at Marble Gully, in the foothills of East Gippsland, Victoria. It is a floristically rich community occurring on very steep slopes with limestone and marble rock outcrops. The community is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Threats to its survival include altered fire regimes, weed invasion and grazing/browsing. This national Recovery Plan for the community details its distribution, habitat, threats and recovery objectives and actions necessary to ensure its long-term survival.

Community Information

Description

Silurian Limestone Pomaderris Shrubland is an ecological community dominated by the rare shrub Limestone Pomaderris (*Pomaderris oraria* subsp. *calcicola*), with occasional emergent Drooping Sheoak (*Allocasuarina verticillata*) and Silver Bundy (*Eucalyptus nortonii*), and Kangaroo Grass (*Themeda triandra*) and Winged Everlasting (*Ozothamnus adnatus*) prominent in the ground layer (Lander & Walsh 1989). The Marble Daisy-bush (*Olearia astroloba*) is endemic to the site, and is listed as Vulnerable under the EPBC Act. The community occurs on a steep (40°–60°), north-facing slope, on skeletal soils derived from Silurian limestone and marble, with prominent limestone and marble rock outcrops. The single known site is about 600 m elevation and has a mean annual rainfall of about 645 mm per year. There is considerable structural variation in this community, ranging from grassland to shrubland and woodland forms (Peel 1993). The community is characterised by a unique assemblage of plant taxa, including many rare, threatened or disjunct species (Peel 1993), including:

- Tall Vanilla-lily (*Arthropodium* sp. 1 (robust glaucous))
- Common Spleenwort (*Asplenium trichomanes* subsp. *quadrivalens*)
- Rough Spear-grass (*Austostipa scabra* subsp. *falcata*)
- Slender Tick-trefoil (*Desmodium varians*)
- Elusive Cress (*Irenepharsus magicus*)
- Grass Cushion (*Isoetopsis graminifolia*)
- Winged Everlasting (*Ozothamnus adnatus*)
- Diosma Rice-flower (*Pimelea flava* subsp. *dichotoma*)
- Poison Rice-flower (*Pimelea pauciflora*)
- Limestone Pomaderris (*Pomaderris oraria* subsp. *calcicola*)
- Pussy Tails (*Ptilotus spathulatus*)
- Dense Bush-pea (*Pultenaea densifolia*)
- Sprawling Cassia (*Senna aciphylla*)
- Delicate New Holland Daisy (*Vittadinia tenuissima*)

Silurian Limestone Pomaderris Shrubland is distinguished from other similar communities by its floristic and structural richness and diversity. Its floristic distinctiveness is attributed to the high fidelity of a large number of its component species for limestone geology, and the variable landforms and long-term absence of fire at the site where it occurs. Two distinct sub-communities have been described (Peel 1993):

The first sub-community occurs on steep slopes where rock outcrops are common, and typically has a shrubland structure, with some woodland and grassland present, depending on the age, health and density of the primary structural species, Limestone Pomaderris. The sub-community has a high diversity of herbaceous species, thought to reflect low levels of ongoing disturbance due to the steep slopes and unstable soils. Characteristic native species able to establish under the disturbed conditions include Winged Everlasting, Cotton Fireweed (*Senecio quadridentatus*) and Sprawling Bluebell (*Wahlenbergia gracilis*). Other frequently occurring

characteristic native herbs include a sedge *Carex breviculmis*, Kidney Plant (*Dichondra repens*), an oxalis *Oxalis perennans*, a Rice Flower (*Pimelea flava*) and Snowgrass (*Poa sieberiana*). There are also a large number of introduced weedy species that are able to persist due to the periodic disturbance of the unstable soils on the steep slopes, with Common Bittercress (*Cardamine hirsuta*), Rigid Fescue (*Catapodium rigida*), Common Centaury (*Centaureum erythraea*) and Velvet Pink (*Petrorhagia velutina*) the most common weeds.

The second sub-community is more variable in its slope position, but occurs mostly on gentler gradients, is more structurally variable and generally more open. The most abundant characteristic shrubs are Limestone Pomaderris and Winged Everlasting. Where the sub-community occurs on steeper slopes with shallower soils it is often over-topped by small trees such as Hairy Bursaria (*Bursaria lasiophylla*) and Drooping Sheoak. On relatively deeper soils the sub-community has a woodland or grassland structure with exceptionally large individuals of Silver Bundy dominating the overstorey. There are fewer weedy herbaceous species, consistent with this sub-community being less disturbed. Abundant characteristic herbs and grasses include *C. breviculmis*, *D. repens*, *O. perennans*, *W. gracilis* and *T. triandra*.

While habitat critical to survival of this community has not been determined, it can be defined as the site at Marble Gully occupied by the community.

Distribution

The only known occurrence of Silurian Limestone Pomaderris Shrubland is at Marble Gully Nature Conservation Reserve (managed by Parks Victoria), near Bindi in the Tambo River valley north-east of Swifts Creek, in eastern Victoria (Figures 1 & 2), occurring in the South East Corner and Australian Alps Bioregions (*sensu* DEH 2000). The community has not been found in any other locations in East Gippsland, despite extensive searching. Although no specific searches for the ecological community have been undertaken in New South Wales, there are no records of its occurrence in areas of similar geology in the parts of the South East Corner and Australian Alps bioregions that occur in that State.



Figure 1. Distribution of Silurian Limestone *Pomaderris* Shrubland community in Victoria

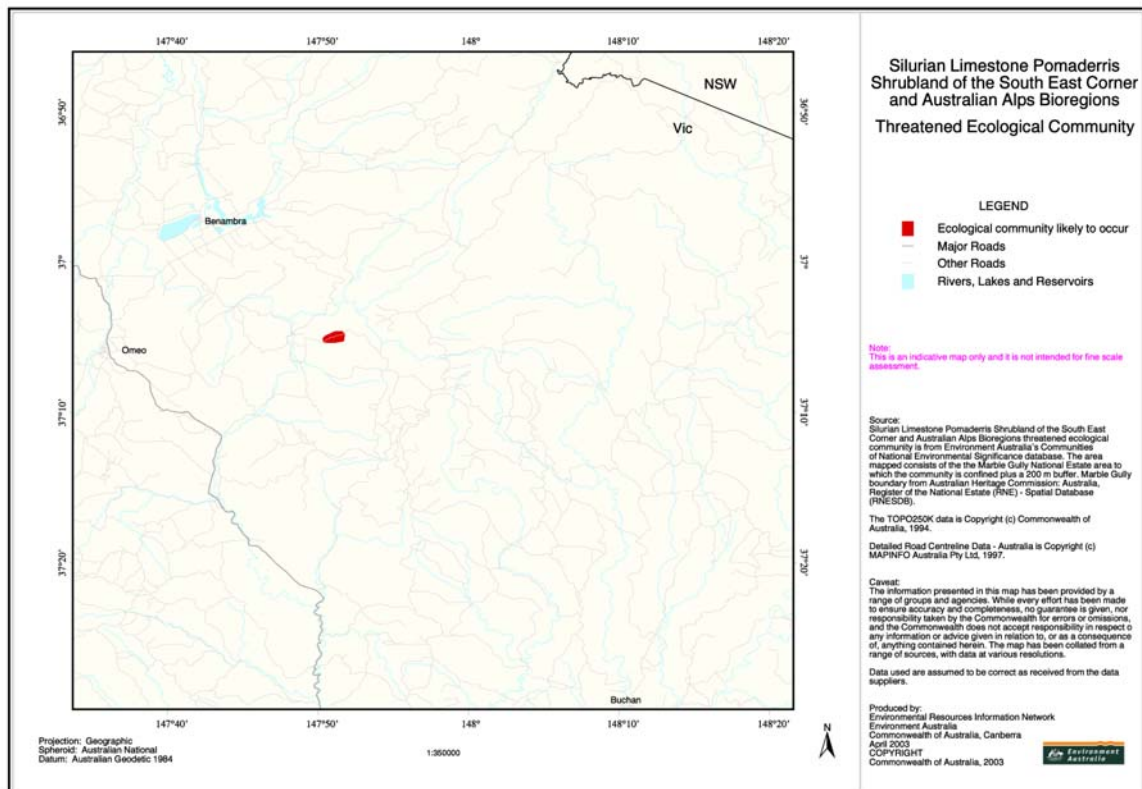


Figure 2. Location of Silurian Limestone *Pomaderris* Shrubland community

Decline and Threats

The Silurian Limestone Pomaderris Shrubland community is likely to have only ever been confined to the Marble Gully area, due to its reliance upon the unique combination of geology and site characteristics occurring there. However, its occurrence at a single, small location makes it highly susceptible to stochastic events, especially earthquakes, due to the very steep slopes and unstable soils. About 20 years ago there was a proposal to mine the site for marble, which would have had a devastating impact on this unique community, but the proposal was rejected by the State Government. Current threats to the community are thought to include increased frequency of fire, weed invasion and grazing, and these are discussed further below:

Altered fire regimes

When it was first described, the composition of the community was thought to be due in part to the long absence of fire, at least 100 years (Peel 1993). However, almost all of the community was burnt in a high intensity wildfire in early 2003. Post-fire monitoring in 2004 (Downe & Coates 2004) and 2006 (DSE, unpubl.) showed that generally the community was recovering well, with extensive re-sprouting and seedling regeneration of structurally important species such as Marble Daisy-bush, Drooping Sheoak and Silver Bundy. However, the species composition has altered, with about 80 native flora species present before the fire not being recorded since the fire, while some native species not previously recorded for the site being recorded for the first time after the fire. Following the absence of fire for more than 100 years, there is a risk that if further fire affected the community within a brief period (e.g. 10 years), it would cause a decline in some characteristic species that depend on seed germination for persistence.

Weed invasion

Although there is some weed invasion at the margins of the community, the vegetation is generally in very good condition. However, some weeds are present, the most serious being

Blackberry (*Rubus fruticosus* spp. agg.) and Horehound (*Marrubium vulgare*). Horehound occurs mainly on the lower slopes of the community, with minor infestations on the upper slopes (Peel 1993). Blackberry infestations are largely restricted to a nearby gully line, although some plants occur within the community. Other environmental weeds that may impact on the community include Sweet Briar (*Rosa rubiginosa*), Pimpernel (*Anagallis arvensis*) and a range of introduced grasses and herbs such as Common Bittercress, Rigid Fescue, Common Centaury and Velvet Pink (Peel 1993).

Grazing/browsing

Wandering domestic cattle and rabbits graze the margins of the community, although their impact was considered minimal (Peel 1993). Cattle grazing is largely confined to the lower slopes due to the steep nature of the site, although rabbits are scattered across the site.

Recovery Information

Existing Conservation Measures

A number of initiatives are already in place to conserve the Silurian Limestone Pomaderris Shrubland community at Marble Gully, including:

- Designation of the site as Nature Conservation Reserve and management for its nature conservation values.
- Monitoring and spraying of weed infestations, especially Horehound and Blackberry.
- Establishing fire recovery plots to monitor the response of the vegetation after the 2003 wildfire.
- Adding Marble Gully to the Register of the National Estate in 1997 for its very high botanical significance.
- Preparation of a national recovery plan for the Marble Daisy-bush (Carter & Walsh 2006), which is endemic to Marble Gully and listed as Vulnerable under the EPBC Act. A number of recovery actions will be common to both the species and the community.

Recovery Objectives, Actions and Performance Criteria

The specific objectives for recovery of the Silurian Limestone Pomaderris Shrubland community are to:

1. Maintain the extent and improve the condition of the community.

Performance criterion: Measurable reduction in the extent of weed infestation, grazing/browsing pressure and herbivore disturbance at the site.

The Silurian Limestone Pomaderris Shrubland community is naturally restricted to a small site, due to a unique combination of geology and site characteristics, so there is no scope to expand the community beyond its naturally occurring limits. Therefore, the priority is to maintain the current extent and improve the condition of the community, principally through controlling threats, and longer term through fire management to restore the pre-fire community.

Action 1.1: Ensure permanent exclusion of cattle from Marble Gully by establishing and maintaining a perimeter fence.

Responsibility: Parks Victoria

Action 1.2: Monitor and control priority environmental weeds including Horehound and Blackberry.

Responsibility: Department of Sustainability and Environment, Parks Victoria

Action 1.3: Monitor and control (if required) rabbits if they start to affect species recovery or spread weed species.

Responsibility: Department of Sustainability and Environment, Parks Victoria

Action 1.4: Prepare and implement a fire management plan for the community, including monitoring of fuel loads and protection from too-frequent fires, and incorporating community ecology information, especially soil- and canopy-seed store levels.

Responsibility: Department of Sustainability and Environment

2. Improve knowledge of community ecology and management requirements.

Performance criterion: Determination of the community species composition and fire ecology of key species, and preparation of management guidelines for incorporation in a fire management plan.

The Silurian Limestone Pomaderris Shrubland community is likely to be a climax community resulting from a long absence of fire. The species composition appears to have changed since the site was burnt in 2003, but whether the change is temporary or permanent, and what further changes are likely, is not known. A condition index needs to be established, community condition monitored, and fire responses of key community species determined, for preparation of fire management prescriptions.

Action 2.1: Establish an index of community condition and monitor and assess the ongoing condition of the community, covering all vegetation structural types across the site annually, using the methodology described in Downe & Coates (2004).

Responsibility: Department of Sustainability and Environment

Action 2.2: Conduct surveys to establish the location of all rare or threatened plant populations in the community, determine the presence/absence of species not recorded since the 2003 fire, and mark and monitor all populations.

Responsibility: Department of Sustainability and Environment

Action 2.3: Investigate fire responses of key community species and prepare management prescriptions for a fire management plan.

Responsibility: Department of Sustainability and Environment.

3. Increase community awareness of and support for the community.

Performance criterion: Information brochures produced and distributed to local community, whose awareness of the site and its values and support for its conservation increases.

Because of the remote location, steep slopes and fragile soils at Marble Gully, there is only limited potential for community involvement in recovery actions. The priority will be to provide information to and liaise with the local community, especially neighbouring landowners, about the area and its values, seeking cooperation and control over wandering stock, fire prevention and control of weeds on their properties.

Action 3.1 Prepare and distribute information on the Silurian Limestone Pomaderris Shrubland and Marble Gully for the local and broader community.

Responsibility: Department of Sustainability and Environment, Parks Victoria

Program Implementation and Evaluation

Implementation of this Recovery Plan for the Silurian Limestone Pomaderris Shrubland community will be managed by the Victorian Department of Sustainability and Environment in partnership with Parks Victoria. The Recovery Plan will run for a maximum of five years from the date of its adoption under the EPBC Act, and will be reviewed and revised within five years of the date of its adoption by DSE.

Management Practices

Management practices required to avoid a significant adverse impact on the community include:

- Control of weeds that are invading the site.

- Control of cattle and rabbits to reduce grazing/browsing pressure and soil disturbance.
- Protection from potential disturbance such as mining and recreational use (e.g. rock-climbing).
- Generally discouraging access to the site due to its remote location, steep slopes and fragile soils, to reduce the risk of accidental disturbance and introduction or spread of weeds.

Biodiversity Benefits

Protection of the Silurian Limestone Pomaderris Shrubland community will maintain protection of a unique assemblage of plants occurring on the site, many of which are rare or threatened in Victoria (see page 2), including the Marble Daisy-bush, which is known only from the site and is listed as Vulnerable under the EPBC Act. Two of the characteristic shrubs of the community, Winged Everlasting and Limestone Pomaderris are rare elsewhere in Victoria, while other plant species present in the community and rare in Victoria include the Delicate New Holland Daisy, Dense Bush-pea, Slender Tick Trefoil and Common Spleenwort (DSE 2005).

Role and Interests of Indigenous People

Indigenous communities on whose traditional lands the Silurian Limestone Pomaderris Shrubland community occurs have been advised, through the relevant regional Indigenous facilitator, of the preparation of this Recovery Plan and invited to provide comments and be involved in the implementation of the plan.

Social and Economic Impacts

The implementation of this Recovery Plan will not cause any significant adverse social and economic impacts. The single location of the community is in a nature reserve, managed by Parks Victoria, which was established to protect this threatened community.

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Priority, Feasibility and Estimated Costs of Recovery Actions

Action	Description	Priority	Feasibility	Responsibility	Cost estimate					
					Year 1	Year 2	Year 3	Year 4	Year 5	Total
1	Community condition									
1.1	Cattle exclusion	1	100%	PV	\$15,000	\$1,000	\$1,000	\$1,000	\$1,000	\$19,000
1.2	Weed control	1	75%	DSE, PV	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
1.3	Rabbit control	1	50%	DSE, PV	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
1.4	Fire management plan	2	100%	DSE	\$0	\$0	\$0	\$0	\$5,000	\$5,000
2	Community ecology									
2.1	Condition index	1	75%	DSE	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$30,000
2.2	Surveys	2	90%	DSE	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
2.3	Fire responses	2	75%	DSE	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000
3	Community awareness									
3.1	Community extension	3	100%	DSE	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000
TOTALS					\$47,000	\$28,000	\$28,000	\$28,000	\$33,000	\$164,000

Abbreviations: DSE=Department of Sustainability and Environment, Victoria; PV=Parks Victoria.