Action statement

Flora & Fauna Guarantee Act 1988

Alpine Bog and Fen (Bog Pool) Communities

Nomination number: 159 and 182

Action statements are developed under the *Flora and Fauna Guarantee Act 1988* (FFG Act). Their preparation and implementation complement the FFG Act strategy *Protecting Victoria's Environment – Biodiversity 2037* and its vision that "Victoria's biodiversity is healthy, valued and actively cared for".

This action statement is prepared to support the conservation and recovery of two threatened communities that co-occur in some locations and are often adjacent. They are subject to common or similar threats and both threatened communities will benefit from coordinated planning and implementation of common actions.

Threatened Communities and Distribution

An alpine bog and fen. Note the light green sphagnum moss edging the pool. Image by Arn Tolsma.

The distribution map displays the indicative range of Alpine Bog Community and Fen (Bog Pool) Communities based on locations that share attributes of the listed community description in Victoria.

Conservation Status

Alpine Bog Community: Threatened in Victoria

Listed under the FFG Act in 1991 as the following criteria were met:

Criterion 2.2 *The community is significantly prone to future threats which are likely to result in extinction*.

Fen (Bog Pool) Community: Threatened in Victoria

Listed under the FFG Act in 1991 as the following criteria were met:

Criterion 2.2 *The community is significantly prone to future threats which are likely to result in extinction.*

Sub-Criterion 2.2.1 *The community is very rare in terms of the total area it covers, or it has a very restricted distribution, or it has been recorded from only a few localities.*

Related national listings

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed ecological community that encompasses the two Victorian threatened communities was listed as Endangered in 1999 and can be found here:

- Alpine Sphagnum Bogs and Associated Fens (environment.gov.au)
- Approved Conservation Advice for the Alpine Sphagnum Bogs and Associated Fens ecological community (environment.gov.au).

Descriptions

Alpine Bog Community is defined as a unit of the 'mesic-hydric alpine complex' and is commonly described as bog, peatland, or moss bed. The dominant vegetation includes *Epacris* species, Spreading Rope-rush (*Empodisma minus*), Candle Heath (*Dracophyllum continentis*), Snowgrass (*Poa costiniana*), Sphagnum moss (*Sphagnum* spp.), Alpine Baeckea (*Baeckea gunniana*), Silver Astelia (*Astelia alpina*) and Fen Sedge (*Carex gaudichaudiana*).

This community is mostly restricted to permanently wet sites along drainage lines and valley floors with a low to moderate slope and hillside slopes in the vicinity of springs. Sphagnum moss is a characteristic feature and can form an extensive cushion or terrace, absorbing and restricting water flow. Extensive peat soils can be present depending on the substrate on which the bog has formed.

Fen (Bog Pool) Community is a narrowly-defined sub-community of the ‘mesic-hydric alpine complex – fens’, the vegetation of pools of standing water within the boggy moss bed “Alpine Bog Community”. The characteristic species are Fen Sedge, Mat Water-milfoil (*Myriophyllum pedunculatum*), Dwarf Buttercup (*Ranunculus millanii*) and Mud Pratia (*Lobelia surrepens*). The pools usually have permanent water, though at the end of a dry summer the free water may disappear while the peaty soil remains very damp.

A more detailed description (including some of the component flora species which make up the threatened community), distribution and references are provided in the threatened communities listing recommendations:

- Alpine Bog Community
- Fen (Bog Pool) Community

Associated and component threatened species

The following FFG Act listed threatened species are associated with, or are components of, the Alpine Bog and Fen (Bog Pool) communities:

Plants: Alpine Fen-sedge (*Carex hypandra*), Alpine Sedge (*C. blakei*), Hair Sedge (*C. capillacea*), Short Sedge (*C. canescens*), Star Sedge (*C. echinata*), Carpet Sedge (*C. jackiana*), Alpine Sun-orchid (*Thelymitra alpicola*), Baw Daisy (*Brachyscome obovata*), Bogong Eyebright (*Euphrasia eichleri*), Bog Billy-buttons (*Craspedia lamicola*), Sickle-leaf Rush (*Juncus falcatus* subsp. *falcatus*), Silky Snow-daisy (*Celmisia sericophylla*), Silver Snow-daisy (*C. tomentella*), Small Flower-rush (*Carpha alpina*), Broad-leaf Flower-rush (*C. nivicola*) and Tufted Hair-grass (*Deschampsia cespitosa*).

Amphibians: Alpine Tree Frog (*Litoria verreauxii alpina*), Baw Baw Frog (*Philoria frosti*) and Booroolong Frog (*L. booroolongensis*).

Birds: Latham’s Snipe (*Gallinago hardwickii*).

Fish: Shaw Galaxias (*Galaxias gunaikurnai*) and Dargo Galaxias (*G. mungadhan*).

Invertebrates: Alpine Spiny Crayfish (*Euastacus crassus*).

Mammals: Broad-toothed Rat (*Mastacomys fuscus*).

Action statements for associated listed threatened species can be found here: Action statements (environment.vic.gov.au)

Threats

Threats listed below have been identified through expert consultation and published literature and are listed in approximate order of severity of risk to the threatened communities.

Threat	Description
Introduced species	
Deer	• Sambar deer (*Cervus unicolor*) cause severe damage to the vegetation structure and soil in wetland and riparian habitats through herbivory, antler-rubbing, trampling, pugging of wet soils, increasing nutrient loads, erosion of waterway edges, and increasing the accessibility of habitat to introduced predators and introduced plants. Sambar deer are a key threat to this threatened community.
Feral horses	• Feral horses (*Equus caballus*) cause severe damage to the vegetation structure and soil in wetland and riparian habitats through herbivory, trampling, pugging of wet soils, increasing nutrient loads and erosion of waterway edges. Their presence can also disperse seeds from introduced plant species, altering habitat composition and structure.
Introduced herbivores	• Other introduced herbivores including feral pigs (*Sus scrofa*), rabbits (*Oryctolagus cuniculus*), hares (*Lepus europaeus*), and livestock degrade habitat through herbivory, trampling, wallowing, pugging of wet soils, increasing nutrient loads, erosion of waterway edges, and increasing the accessibility of the threatened communities to invasive plants. Herbivory and trampling lead to damage to and loss of flora, preventing recruitment and causing alterations to vegetation composition, structure, and function.
Introduced plants	• Introduced plants, mainly Grey Sallow (S*alix cinerea*), change the structure and composition of the threatened communities, impacting vegetation structure, condition, and ecosystem function. Other species include Soft Rush (*Juncus effusus*), Greater Bird's-foot Trefoil (*Lotus uliginosus*), Musk Monkey-flower (*Erythranthe moschata*) and Water Forget-me-not (*Myosotis laxa* subsp. *caespitosa*).
Climate Change	
Altered flowering or germination	• Climate change may change the timing and success of flowering and germination events of component flora, thus affecting species composition.
Altered rainfall and temperature regimes	• Climate change, increasing temperature, altered rainfall and a reduction in snowfall and snowmelt are likely to magnify existing threats and may reduce the extent of the threatened communities and alter vegetation composition, structure, and function. • Reduced annual rainfall and increased maximum temperatures reduce groundwater outflow availability and therefore surface water flow and impact the extent and/or area of fens.
Fire	
Altered fire regimes	• A hotter, drier climate may increase the likelihood or frequency of fire impacting habitat with the potential to reduce the threatened communities' extent and/or condition. • Frequent and/or intense fire may lead to ecosystem decline and alter vegetation structure, composition, and function through preferencing re-sprouting and short-time-to-maturity plant species and may damage bog structure and consume peat

Threat	Description
	substrates. Bogs require decades to recover from fire and where fire has burnt the peaty substrate, bogs may be permanently eliminated.
Fire management activities	• Fire management operations such as creation of fuel breaks (soil disturbance and slashing) may remove or modify the threatened communities, reduce regeneration, and affect ecosystem structure and function.
Human Disturbance	
Construction, development and infrastructure	• Construction, development, and maintenance activities (such as for roads, dams, aqueducts, ski resorts and utilities) may result in direct removal of threatened communities or indirect impacts through altered hydrology and increased risk of weed incursion.
Emergency response activities	• Some emergency response activities (e.g., vegetation clearance and/or earthworks, application of fire retardant) can inadvertently lead to alterations in vegetation structure and composition, and ecological function.
Recreational activities	• Recreational activities (such as walking, horse-riding, cycling, camping, trail bike riding, and off-road driving) may damage the threatened communities and alter hydrology, vegetation composition, structure, and ecosystem function.
Loss, degradation or modification of the threatened communities	
Livestock grazing	• Livestock can cause ecosystem degradation through the combined effects of herbivory, trampling, soil compaction, soil erosion, pugging of wet areas, reduced native plant biomass and recruitment and excess nutrient loads. Livestock can also spread weed seeds, leading to weed incursion.
Reduced connectivity	• Loss of connectivity reduces access to the threatened communities and opportunity for genetic exchange between populations of native fauna utilising the communities' habitats.
Species richness declines	• Local extinctions of species that form part of the threatened communities may result in a cascade of effects and trigger further declines in composition, structure, and ecological function.

Conservation Objectives

Conservation objectives are informed by the criteria for listing the threatened community on the FFG Threatened List. This provides a framework to understand how we can work towards conservation and recovery of the threatened community and subsequent removal from the Threatened list.

The key objectives of this action statement are:

- Protect and manage high value and/or significant areas and sites of the threatened communities.
- Minimise further decline and increase the extent and improve the condition of the threatened community to improve connectivity and increase resilience.
- Improve knowledge and understanding of the ecology, ecosystem processes, distribution, condition, threats, management, and conservation requirements of the threatened communities.
- Support community participation and improve awareness for the protection and restoration of the threatened communities, component species and associated threatened species.

Conservation Actions

The actions below have been identified through expert consultation and published literature. Actions are grouped and then listed alphabetically within each group. This is to enable all interested parties to understand related or interconnected activities and prioritise based on their own context, capacity, and capability. Landscape scale actions may mitigate threats for adjacent threatened communities and other species. For more information on where to undertake actions that benefit the threatened communities and multiple species, please refer to NatureKit.

Action	Description
Assessment and research	
Research	• Improve knowledge of ecology, ecosystem processes and management needs of the threatened communities, particularly under climate change scenarios, including where in the landscape they are most vulnerable, and which interventions could increase resilience to climate change. • Improve understanding of ecosystem restoration, revegetation, and management approaches, under which circumstances management should occur under a changing climate and prepare or update management guidelines as needed. • Investigate the impacts of known threats, such as introduced species, disturbance activities and fire, and the effectiveness of management decisions and actions, including recovery without intervention and bog and fen rehabilitation. • Investigate the need and options for a translocation program for component species of the threatened communities to meet the objectives of the action statement, such as undertaking trials to determine the requirements for successful re-establishment of *Sphagnum*.
Survey and monitoring	• Continue to monitor the threatened communities at known sites and other suitable locations to assess distribution, species composition, condition, threats (particularly introduced herbivores), management and recovery needs, and monitor the trends in these measures. • Undertake field assessments to support preparation of, or review and update, maps of the extent and condition of the threatened communities. • Ensure the existing mapping of the threatened communities is incorporated into corporate and planning systems.
Collaboration, partnerships and engagement	
Community engagement and awareness	• Continue to identify, promote, and support opportunities for community involvement in conservation efforts to assist recovery of these threatened communities. • Develop education materials and activities about the value and role of the threatened communities to support engagement and awareness. • Increase stakeholder and landholder awareness of the threatened communities, their ecological needs, introduced species management and impacts of activities, such as livestock grazing. Provide guidance on management changes that may be required to support the threatened communities' recovery. • Work with land managers and planning authorities to confirm the presence, condition, and distribution of the threatened communities.
Conservation planning and protection	
Conservation management planning	• Determine areas and sites of highest value or significance and prioritise for protection, management, restoration, or non-intervention as needed. • Review conservation management plans, and update as needed, to support recovery of the threatened communities including for priority areas or sites.

Action	Description
	• Consider the impacts of grazing on threatened communities in issuing or reviewing grazing licenses on public land. • Investigate local government provisions and planning tools to support conservation and management of the threatened communities.
Permanent protection *	• Investigate incentives, voluntary agreements, covenants, and other permanent protection measures to enable protection and restoration of priority sites.
Protect remnant areas *	• Ensure that the threatened communities' distribution data and ecological information are available and considered in planning for developments, land use changes, infrastructure, and utilities planning and maintenance. Ensure that the cumulative impact of previous loss and degradation is factored into consideration of potential losses. • Support the development of coordinated programs to encourage protection and management of priority sites of the threatened community. Including preventing or minimising changes to hydrology and water flows, and increased run-off or sediment
Threat management	
Avoid and/or mitigate impacts associated with emergency response	• Ensure that threatened communities' mapping and ecological information are available and considered in emergency management activities. This includes approved work instructions, guidelines, and standards to help avoid and minimise impacts of activities on the threatened communities.
Avoid and/or mitigate impacts associated with fire management	• Ensure that the threatened communities' distribution data and ecological information are available and considered in fire management activities. • Undertake biodiversity values check prior to fuel management in areas where the threatened communities occur, to confirm treatment suitability and timing.
Collect and store reproductive material	• Undertake appropriate propagule collection for long-term storage of priority component plants, including threatened species. Ensure that adequate supply and genetic diversity is secured for future reintroduction and that essential information (such as how to break dormancy) is known.
Control deer *	• Implement and maintain effective management and control of Sambar Deer in priority areas.
Control feral horses *	• Implement and maintain effective control of feral horses in priority areas.
Control introduced herbivores *	• Implement and maintain effective management and control of other introduced herbivores (feral pigs, rabbits, and hares) in priority areas.
Control introduced plants *	• Implement and maintain effective management and control of introduced plants (particularly Grey Sallow and emerging weeds) in priority areas and revegetate with appropriate native species, where required.
Manage impacts from natural disaster events	• Identify and implement recovery actions for areas of the threatened communities impacted by natural disaster events and/or emergency response, such as associated with significant bushfires.
Restoration and/or revegetation	• Restore and/or revegetate priority areas, where needed, to improve ecosystem condition, connectivity, and function.

**Indicates landscape-scale actions that may deliver benefits to multiple species*

Past Actions

A representative sample of key conservation management actions delivered in the past 10 years are listed below.

Past action	Description
Community engagement and awareness	• Alpine Ecology course delivered biannually.
Conservation management planning	• Legislation to ban cattle from the Alpine National Park passed in 2015. • National Recovery Plan for the Alpine Sphagnum Bogs and Associated Fens published in 2015. • Protection of the Alpine National Park: Feral Horse Action Plan published in 2021. • Greater Alpine National Parks Management Plan published in 2016. • Victorian Alpine Peatlands Spatial Action Plan published in 2015. • Victorian Deer Control Strategy published in 2022. • Work Instruction for the Management of Alpine Peatlands Values During Fire Response Work prepared in 2016 and updated in 2022.
Control introduced herbivores	• Control of pigs and deer undertaken through targeted aerial shooting program post bushfires around burnt bogs in 2019-2023. • Control of feral horses has been undertaken over the past decade and is now guided by the 2021 Feral Horse Action Plan. • Control of pigs in Alpine Sphagnum Bogs through the Protecting Biodiversity program in 2023. • Fencing of selected areas of alpine bogs and fens in the Alpine National Park to restrict introduced herbivore access.
Control introduced plants	• Weed control of Grey Sallow, Soft Rush, Greater Lotus, Water Forget-me-not, and other weeds undertaken in the Alpine National Park.
Deliver landscape scale programs	• Programs have been implemented in regions and catchment areas to promote awareness of these and other threatened communities and provide information and incentives to improve protection, management, and restoration. • See Biodiversity On-Ground Action programs which includes: Biodiversity Response Planning projects (2018): ‘Mitigating the threat of Ox-Eye Daisy on North East Forests and Alps’ to protect alpine grasslands and other threatened habitats, and ‘Protecting biodiversity in Victoria’s alpine resorts, pest plants and predator control’.
Fire management	• Impacts associated with fire management activities on public land have been managed through a value checking and risk mitigation process for planned burn and roading activities.
Survey and monitoring	• Detailed mapping of alpine sphagnum bogs undertaken between 2004-2018 including alpine bogs in the Cobungra State Forest published in 2018, and bog condition and management priorities determined concurrently. • Monitoring of peatlands and introduced plant and animal management programs in alpine resorts.

Past action	Description
	• Peatland monitoring program of approximately 60 sites on a regular basis (4–5-year intervals).
Research	• Alpine peatland research questions developed at the Global Water Forum in 2023.

Decision Support Tools

Decision making for conservation actions is supported through the following Victorian Government tools which may be of assistance in choosing the most appropriate or beneficial actions for biodiversity:

- Choosing actions for nature: NatureKit
- Biodiversity Knowledge Framework

Further Information

- FFG Act Final Recommendation Report - Alpine Bog Community
- FFG Act Final Recommendation Report - Fen (Bog Pool) Community
- EPBC Act Alpine Sphagnum Bogs and Associated Fens Listing Advice
- EPBC Act Alpine Sphagnum Bogs and Associated Fens Conservation Advice.
- National Recovery Plan for the Alpine Sphagnum Bogs and Associated Fens
- Victoria's changing climate – drivers and impacts of climate change in Victoria
- Commonwealth Threat Abatement Plans
- Flora and Fauna Guarantee Regulations 2020
- FFG Act action statements

Get Involved and Take Action

If you are interested in supporting the recovery of these threatened communities, and associated threatened species, there are some important things you need to consider.

The Department of Energy, Environment and Climate Action (DEECA) is committed to engaging and partnering with Traditional Owners on how they wish to be involved in the planning and implementation of actions for this species. Steps must be taken to avoid harm and where appropriate ensure actions can deliver cultural benefits.

You can find advice about required approvals, land manager and/or owner permissions, options and incentives for private land conservation, and engagement with Traditional Owners and public land managers here: Action statements (environment.vic.gov.au)

To identify the relevant Traditional Owners, use the Aboriginal Cultural Heritage Register and Information System (ACHRIS) Welcome to Country and Acknowledgements Map.

You can also register your interest in taking action so we can connect you to other people or organisations working to help us secure the future for Victoria's threatened species and communities at threatened.species@deeca.vic.gov.au

Reporting Actions

Activity data is critical to monitoring the implementation and progress of actions and evaluating action statements. These data are also used to:

- Determine progress towards achieving the contributing targets for Protecting Victoria's Environment – Biodiversity 2037.
- Inform the five-yearly State of the Environment Report.

For guidance on reporting actions refer to Activity Data.

Submitting Monitoring Data

For species that occur in these threatened communities the **Victorian Biodiversity Atlas** (VBA) provides a foundational dataset showing where biodiversity occurs across the Victorian landscape and how it may have changed over time. This is a core input for decision support tools that inform conservation action, public land management, research activities and reporting. We encourage all participants in the delivery of on-ground actions to submit species records and observations, including for introduced species, to the VBA as they carry out projects.

For further information see: Victorian Biodiversity Atlas (environment.vic.gov.au)

Sign up and begin submitting your data today at: https://vba.biodiversity.vic.gov.au/

Acknowledgment

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.

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Accessibility

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