

Action statement

Flora & Fauna Guarantee Act 1988

Southern Bent-wing Bat (*Miniopterus orianae bassanii*)

Taxon ID: 61343

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”.

Species and Distribution



Southern Bent-wing Bat. Image by Lindy Lumsden.



This habitat distribution model displays the indicative range of the Southern Bent-wing Bat based on occurrence records and likely habitat. See [NatureKit](#) for an interactive map. The Southern Bent-wing Bat also occurs outside of Victoria, with one of the three known maternity caves occurring in South Australia.

Conservation Status

Critically Endangered

Listing criteria: 3.1.2 (a),(b)(i,iii,v) of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- its geographic distribution is highly restricted; and
- it is restricted to a limited number of areas that are subject to the same threat or suite of threats that can impact all individuals present; and
- there is a continuing decline or reduction in:
 - its extent of occurrence; and
 - the area, extent or quality of habitat; and
 - the number of mature individuals.

Corresponding International Union for the Conservation of Nature (IUCN) criteria: B2ab(i,iii,v).

More information on IUCN listing criteria can be found here: [IUCN Red List of Threatened Species](#)

Species Information

Species information such as its description, distribution, ecology and references are provided in the [Southern Bent-wing Bat Species Forecast Report](#).

Threats

Threats listed below have been identified through expert consultation and published literature.

Threat	Description
Habitat loss, degradation or modification	
Loss of key habitat features	<ul style="list-style-type: none"> There are only two maternity caves used by the Southern Bent-wing Bat in Victoria, and as such these sites are critical to the survival of the species. Risk of collapse of the main maternity cave due to natural weathering and potential weakening from previous land management practices poses a significant threat to the species. Vegetation growth around the entrance to some non-breeding caves has obstructed the flight space, and, in some cases, prevented bat access to the roost site.
Reduced wetland area	<ul style="list-style-type: none"> Loss of large wetland complexes (mainly from draining for crop production and stock grazing) has greatly reduced foraging habitat. Remaining wetlands are drying as a result of groundwater extraction and declining rainfall.
Vegetation clearing or damage	<ul style="list-style-type: none"> Foraging habitat has been significantly modified and fragmented through historic land clearing (> 90% of the native vegetation within the range of the Southern Bent-wing Bat has been removed), greatly reducing foraging opportunities.
Human disturbance	
Animal collision with built structures	<ul style="list-style-type: none"> Deaths have occurred due to collisions with fencing and other infrastructure around the South Australian maternity cave, particularly young as they are developing their flying skills. Barbed wire fences placed in flight paths to/from a roost site may cause locally significant levels of mortality to flying bats.
Infrastructure	<ul style="list-style-type: none"> Onshore wind farm developments pose a number of risks to bats, including cave destruction during construction, mortalities due to collisions and barotrauma (a result of changing air pressure around moving blades), and limiting access to foraging areas. Evidence suggests peak mortality occurs over autumn. Offshore wind farms may also pose a risk where related land infrastructure is situated close to roost caves.
Recreational activities	<ul style="list-style-type: none"> The species is highly sensitive to people entering caves, especially using white lights. Young bats are particularly vulnerable during the breeding season when they can become dislodged from the ceiling and fall to the cave floor, leading to pup deaths. Adults in torpor in the cooler months are also vulnerable, using up valuable fat reserves each time they rouse when disturbed, with multiple disturbances leading to reduced health outcomes as animals exhaust these reserves. If human disturbance occurs repeatedly, a roost site may be abandoned.
Vandalism	<ul style="list-style-type: none"> Vandalism has been observed at some maternity sites and key non-breeding roosts, including an attempt to set fire to surrounding vegetation and large timber logs being thrown into a cave.

Threat	Description
Climate change	
Increased frequency and severity of droughts	<ul style="list-style-type: none"> Decreased rainfall and increased droughts will reduce wetland extent, tree health, water and prey availability, which is likely to affect survival rates and reproductive success.
Pathogens and disease	
Disease (other)	<ul style="list-style-type: none"> In 2008 there was a high mortality of pups at the South Australian maternity site, with individuals suffering from severe ulcerative skin lesions and malnutrition. In 2009, a large proportion of the population was observed with small ulcers that were attributed to parasites and a pox virus. It is unclear whether these lesions and ulcers affected the bats' survival, or if similar health issues occurred in the Victorian sites.
White-Nose Syndrome	<ul style="list-style-type: none"> Risk of introduction of White-nose Syndrome (WNS) caused by the fungus <i>Pseudogymnoascus destructans</i> has been assessed as 'likely' to be introduced into an Australian bat cave, with the Southern Bent-wing Bat predicted to be the most severely impacted taxon.
Pollutants and toxicants	
Pesticide use	<ul style="list-style-type: none"> A range of pesticide residues, including DDT and DDE, have been found in Southern Bent-wing Bats and bat guano at maternity sites. A recent investigation determined that pesticide accumulation is unlikely to have directly contributed to population declines, but there may be sub-clinical effects impacting survival rates. Pesticide use may also severely reduce the abundance of prey species such as moths and their larvae.
Population dynamics	
Loss of genetic diversity	<ul style="list-style-type: none"> Genetic studies have revealed low genetic diversity within the Southern Bent-wing Bat, which may have a detrimental impact on its long-term viability.
Introduced species	
Feral cats	<ul style="list-style-type: none"> Feral cats (<i>Felis catus</i>) have been recorded preying on bats as they exit caves, sometimes taking significant numbers. Feral cats have been observed and trapped in and around the South Australian maternity cave.
Foxes	<ul style="list-style-type: none"> Foxes (<i>Vulpes vulpes</i>) have been recorded preying on bats, and foxes and numerous fox scats have been observed in maternity caves and several non-breeding caves.
Rats	<ul style="list-style-type: none"> Black Rats (<i>Rattus rattus</i>) are present in the largest Victorian maternity cave and may prey on bats.
Fire	
Bushfire	<ul style="list-style-type: none"> Fire will negatively impact available foraging habitat and prey availability and could directly impact roosting bats by smoke inhalation and possibly death, if smoke was drawn into the caves.

The above threats also operate in South Australia, at the other known maternity cave, and within the bat's foraging areas.

Conservation Objectives

Conservation objectives are informed by the conservation status and criteria (derived from IUCN) under which the species was listed under the FFG Act. This provides a framework to understand how we can work towards recovery and improve the species' conservation status over time as per the objectives of the FFG Act.

The key objectives of this action statement are:

- Mitigate threats to populations and habitat to increase resilience, increase genetic fitness and minimise future population decline.
- Increase knowledge of biology, ecology, distribution, demography, emerging threats, and conservation requirements.
- Support community participation and improve awareness of the Southern Bent-wing Bat and its breeding and foraging habitats.

Conservation Actions

The actions below have been identified through expert consultation, published literature and spatial analysis. Actions are listed in alphabetical order to allow all interested parties to prioritise based on their context, capacity and capability. Landscape scale actions may mitigate threats for other species. For more information on where to undertake actions that benefit multiple species and identify the most beneficial locations to undertake actions for this species, please refer to [NatureKit](#).

Action	Description
Community engagement and awareness	<ul style="list-style-type: none"> • Increase public awareness of the Southern Bent-wing Bat (without publicising locations of individual roosting sites) and involve community groups in the implementation of conservation actions, where appropriate. • Increase landholder awareness on the impact of pesticides on insect food resources and encourage integrated pest management, prioritising landholders within foraging range (50-60 km of known important roost sites and maternity caves). • In conjunction with caving organisations, develop and promote a code of conduct for cave visits to limit access and mitigate disturbance to the Southern Bent-wing Bat. • Continue to work with the managers of key roosting sites on private land to implement management actions. • Develop, publicise and implement biosecurity protocols for disease prevention (including WNS) for cavers, researchers, and the public.
Control feral cats and foxes *	<ul style="list-style-type: none"> • Implement effective management and control of feral cats and foxes at maternity sites and key non-breeding sites.
Identify and protect key habitat	<ul style="list-style-type: none"> • Protect all maternity caves and key non-breeding roosts from loss, damage, and disturbance. • Identify and protect key foraging habitats (treed/wooded areas, waterways, and wetlands) within 80 km of maternity caves and key non-breeding roosts.
Investigate voluntary agreements and/or covenants *	<ul style="list-style-type: none"> • Establish conservation covenants or management agreements on private land containing important roosting or foraging sites, to increase habitat protection.
Manage built infrastructure	<ul style="list-style-type: none"> • Avoid positioning wind turbines near important roosts (maternity and non-breeding), within key foraging areas, and in potential flight routes between these locations where possible.

Action	Description
	<ul style="list-style-type: none"> • Increase turbine cut-in speed (wind speed at which the turbines begin to operate) during key risk periods to minimise bat fatalities.
Manage public access	<ul style="list-style-type: none"> • Prevent disturbance at maternity caves and key non-breeding roost sites from human activity through installation of security cameras or other monitoring equipment, and gating or fencing of access points away from the caves.
Pathogens and disease	<ul style="list-style-type: none"> • Continue disease surveillance in the population. • Implement an education campaign targeting recreational and professional cave users on the importance of biosecurity, including advice on practical measures to reduce transmission of pathogens from one cave to another and disease surveillance. • Invest in prevention and preparedness activities for introduction of WNS into Australia (for example, pre- and post-border activities and education campaigns).
Research	<ul style="list-style-type: none"> • Determine population numbers, survival rates and breeding success for the two Victorian subpopulations. • Determine foraging habitat, movement patterns, seasonal dietary requirements, and availability of important invertebrate prey species. • Undertake genetic analyses to improve understanding of the subspecies' population structure, movements between subpopulations and the implications of low genetic diversity. • Collect and analyse genetic samples to further refine the distribution of the Southern Bent-wing Bat. • Develop a field identification tool to distinguish between the Southern Bent-wing Bat and the Eastern Bent-wing Bat. • Investigate factors that would assist in determining the potential impact of WNS, such as hibernation ecology, immune response, and susceptibility to the fungus that causes the disease. • Determine environmental water requirements for foraging, drinking and maintaining cave roost microclimates. • Further investigate the cumulative and population level impacts of mortality at wind farms, and the effectiveness of potential mitigation measures such as increasing turbine cut-in speed.
Restoration and/or revegetation *	<ul style="list-style-type: none"> • Restore woodland habitats through revegetation projects, including planting and/or direct seeding, and encouraging natural regeneration (e.g. grazing control around remnant trees) as well as weed control. • Restore wetland habitats (including restoration of water regimes and revegetation) in priority areas for the Southern Bent-wing Bat.
Surveys and monitoring	<ul style="list-style-type: none"> • Monitor population at maternity and non-breeding roost sites (during both breeding and non-breeding seasons) to determine populations size and the relative usage of each site, patterns of use, and movement between the roosts. • Measure microclimatic conditions in both maternity and key non-breeding caves. • Undertake disease surveillance, to obtain baseline health data and detect disease events. • Search for new roosting sites.

Action	Description
	<ul style="list-style-type: none"> Undertake a cave audit to identify management requirements, and caves that were used in the past but have since been abandoned to investigate the potential for restoration.

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

Past Actions

The key conservation management actions listed below have been delivered in the past 10 years.

Past action	Description
Community engagement and awareness	<ul style="list-style-type: none"> The Southern Bent-wing Bat was crowned the inaugural COSMOS Australian Mammal of the Year (2022), significantly raising its public profile. Disease surveillance fact sheets were developed for the public, veterinarians and cavers/cave managers, especially in relation to WNS. A communications strategy has been developed.
Conservation and management planning	<ul style="list-style-type: none"> A Specific Needs Assessment was commenced in 2022 to estimate the Southern Bent-winged Bat's likely persistence under various threat and action scenarios, and to identify highest-benefit cost-effective management actions to inform future conservation activities. Advice has been provided to wind farm developments to reduce the mortality risk at wind farms.
Control foxes	<ul style="list-style-type: none"> Fox control has been undertaken twice, at one maternity cave, since 2014.
Control rabbits	<ul style="list-style-type: none"> Management actions have been undertaken at the Warrnambool maternity site, with rabbit proof fencing and rabbit control.
Establish/maintain Recovery Team	<ul style="list-style-type: none"> The Southern Bent-wing Bat National Recovery Team was formed in 2019.
Identify and protect key habitat	<ul style="list-style-type: none"> Significant progress has been made on protecting the most important roosting site in Victoria, with this site now actively managed for its conservation values. Arrangements have been put in place with landowners to ensure that the integrity of key roosting sites are maintained.
Limit public access to important sites	<ul style="list-style-type: none"> Fencing has been erected surrounding the entrances to several caves, to exclude stock and people but allow free access to bats.
Research	<ul style="list-style-type: none"> New techniques have been developed to determine survival rates, movement patterns and breeding success. Detailed studies have investigated various aspects of the ecology of the Southern Bent-wing Bat, including survival rates, breeding success, movement patterns, foraging activity and diet. A detailed health assessment has been undertaken (ectoparasites, blood parasites, pathology, viruses, fungi and haematology). A risk assessment was undertaken to assess the risk of WNS on the Southern Bent-wing Bat. Genetic analysis is underway to investigate population structure and genetic diversity, and to clarify the taxonomic status.

Past action	Description
	<ul style="list-style-type: none">A Population Viability Analysis was undertaken to predict future population trends.
Surveys and monitoring	<ul style="list-style-type: none">In recent years significant progress has been made on developing more sophisticated techniques to estimate numbers at maternity caves and some key non-breeding caves, using thermal imaging cameras and infrared cameras in conjunction with purpose developed tracking software.The two Victorian maternity caves and their associated populations have been regularly monitored over the past decade.Cave microclimate (temperature and humidity) has been measured in key roosting caves for several years.

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

- [Southern Bent-wing Bat Species Forecast Report](#)
- [Threatened Species Assessment report – Southern Bent-wing Bat \(*Miniopterus orianae bassanii*\)](#)
- [Commonwealth Species Profile and Threats database](#)
- [Commonwealth Threat Abatement Plans](#)
- [Victoria's changing climate – understanding the impacts of climate in Victoria](#)
- [Flora and Fauna Guarantee Regulations 2020](#)
- [IUCN Red List criteria descriptions](#)

Get Involved and Take Action

If you are interested in supporting this species' recovery, 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 / owner permissions, options and incentives for private land conservation, and engagement with Traditional Owners and public land managers here: [Action statements \(environment.vic.gov.au\)](https://environment.vic.gov.au/action-statements)

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

Interested parties are encouraged to work together across community, government, private and public land managers and Traditional Owners to undertake these actions and secure funding for their implementation.

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 this species 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 undertaken on this species, refer to [Activity Data](#).

Submitting Monitoring Data

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. As a core input for decision support tools that inform conservation actions, public land management, research activities and reporting, we encourage all participants in the delivery of on-ground actions to submit species records, including for weeds and introduced animals, and observations as they carry out their 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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