Action statement

Flora & Fauna Guarantee Act 1988

Mallacoota Burrowing Crayfish *(Engaeus mallacoota)*

Taxon ID: 1694

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

Mallacoota Burrowing Crayfish. Image by Tarmo A. Raadik.

Mallacoota Burrowing Crayfish's Victorian Biodiversity Atlas (VBA) records since 1970. See NatureKit for an interactive map.

Conservation Status

Critically endangered

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

This means that:

- The Mallacoota Burrowing Crayfish's geographic distribution is extremely restricted; and
- the distribution of the population or habitat of the taxon is severely fragmented; 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
  - its area of occupancy; and
  - the area, extent or quality of habitat; and
  - the number of mature individuals.

Corresponding International Union for the Conservation of Nature (IUCN) criteria: B1ab(i,ii,iii,v)+2ab(i,ii,iii,v).

More information on IUCN listing criteria can be found here: IUCN Red List criteria.

Species Information

Species information such as its description, distribution, ecology and references are provided in the Mallacoota Burrowing Crayfish Species Forecast Report.

Threats

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

Threat	Description
Altered hydrology	
Altered water regime	• Changes to flow or water regimes which do not align with the species needs, may impact habitat suitability, recruitment and/or mortality, and ultimately site occupancy. • The construction of dams can flood suitable habitat and remove existing habitat by reducing water levels in natural streams. The release of water causes fluctuating water levels in the riparian zone. Pumping ground water to store in dams reduces the water table level. Altering drainage patterns, disturbs creek bank integrity and water flow, and dries suitable habitat.
Changes to groundwater	• Changes to groundwater height or salinity may impact vegetation health, degrade habitat, and potentially impact populations through changes in recruitment and/or mortality.
Climate change	
Extreme weather events	• Climate change may increase the frequency and intensity of storms and flooding, increasing erosion and impacting habitat condition, and potentially causing mortality events.
Increased frequency and/or length of droughts	• Drying and warming of the environment, including droughts, may lead to habitat changes, and impact recruitment and/or mortality rates.
Population dynamics	
Small population size	• Small populations have lower resilience to the risk of stochastic events, and increased risk of genetic decline.
Habitat loss, degradation or modification	
Degradation of riparian and/or wetland vegetation	• Degradation of vegetation in riparian and wetland habitats reduces habitat extent and/or condition, potentially impacting species persistence. • Removal of riparian vegetation can contribute to soil erosion, stream bank damage, siltation of streams and cause possible damage to the crayfish burrows.
Forestry operations	• Forestry operations across the species' catchment can impact the water table levels and hydrological regimes causing habitat degradation or loss. • Forestry operations have the potential to remove or degrade habitat, compact soils, contribute to erosion and sedimentation, exacerbate the spread of introduced species, pathogens and parasites, and cause mortality.

Threat	Description
Livestock	• Livestock can cause habitat degradation through the combined effects of herbivory, trampling, soil compaction, pugging of wet areas, and excess nutrient loads.
Pollutants and toxicants	
Pollution from terrestrial sources	• Land-based runoff and pollutants pose a threat to aquatic species and ecosystems, either through direct impacts on health, recruitment and/or mortality, or indirectly by affecting food availability and/or habitat condition. • Foreign chemicals, including fire retardant and pesticides can enter sensitive habitats and pollute waterways.
Human disturbance	
Road and track construction or maintenance	• Roadside populations are vulnerable to loss or damage to individuals and habitat, as a result of direct impacts of road construction and maintenance works (e.g., grading/mowing/slashing/lopping) and indirect impacts from associated run-off, soil erosion, and potential weed and pathogen introduction.
Fire	
Altered fire regimes	• A hotter, drier climate may increase the likelihood or frequency of fire impacting the species' habitat, with the potential to reduce habitat extent and/or condition. • Fires (including planned burns) can result in habitat degradation and mortality. • Post-fire debris flows in waterways can increase during high intensity rainfall events.
Emergency response	• Fire retardant can release chemicals into Mallacoota Burrowing Crayfish habitat which can be toxic to the species. • Some emergency response activities can inadvertently lead to alterations in habitat and vegetation structure.
Fire management activities	• This species is vulnerable to mechanical disturbance from heavy machinery and increased sediment inputs from roads or tracks. Fire management operations such as creation of fuel breaks (soil disturbance, slashing) may remove habitat, cause mortality of individuals.
Introduced species	
Deer	• Introduced deer species (Sambar deer (*Cervus unicolor*), Red Deer (*Cervus elaphus*) and Fallow Deer (*Dama dama*)) degrade habitat 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.

Conservation Objectives

Conservation objectives are informed by the conservation status and criteria 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, improve genetic fitness and minimise future population decline.
- Increase the Mallacoota Burrowing Crayfish's range and/or extent, by providing suitable habitat and opportunities for natural or assisted movement.
- Increase knowledge of biology, ecology, distribution, demography, emerging threats, and conservation requirements.
- Support community participation in monitoring and improve awareness of the Mallacoota Burrowing Crayfish and conservation of its habitat.

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
Avoid and/or mitigate impacts associated with fire management	• Ensure that species distribution data and ecological information is available and considered in fire management activities. • Undertake biodiversity values check prior to undertaking fuel management burns in areas of the species habitat, to confirm treatment suitability and timing.
Community engagement and awareness	• Continue to identify, promote and support opportunities for community involvement in conservation efforts. • Engage citizen scientists in information gathering to inform improved management for the species. • Increase landholder awareness of the Mallacoota Burrowing Crayfish in areas where pasture is located adjacent to habitat and the impacts of livestock grazing. Provide guidance on the changes to grazing that may be required, such as fencing off riparian zones, to support the recovery of the species. • Work with key stakeholders to reduce threats and encourage adherence to behaviours that support a healthy environment.
Control deer *	• Implement and maintain effective control of deer in priority areas to prevent or reduce erosion of riverbanks and riparian zones.
Develop, update and apply forestry protections	• Maintain prescriptions for this species under the *Code of Practice for Timber Production 2014 (as amended in 2022)* (the Code). • Where relevant, incorporate species-specific protection measures into plans and permits relating to timber harvesting operations in native forest on private land.
Genetic rescue	• Investigate the need and options for managing risks from stochastic events and improving resilience through enhancing genetic exchange, via physically linking populations with enhanced habitat, translocation, or genetic management in an ex-situ setting.
Manage built infrastructure	• Consider the species requirements in the placement and design of built infrastructure near key habitat. Include planning for appropriate buffers to limit off-site impacts of infrastructure.

Action	Description
Manage impacts from natural disaster events	• Identify and implement recovery actions for vulnerable populations impacted by natural disaster events and/or emergency response (e.g., associated with significant fire or flood events).
Manage road and track works	• Manage and minimise sediment delivery to key habitat streams from road drainage during high rainfall events. • Protect habitat from disturbances caused by track, bridge and ford construction and maintenance, particularly from heavy machinery.
Protect key habitat	• Maintain and improve vegetation cover and health along the banks and riparian zone of streams containing Mallacoota Burrowing Crayfish. • Minimise alterations to groundwater and surface water hydrological regimes upstream or in surrounding landscapes.
Research	• Increase understanding of breeding biology and fecundity, lifespan, diet, movement, burrow creation and placement in landscape and other knowledge gaps to support translocation efforts. • Increase understanding of genetic risks and management options. • Investigate and determine a suitable fire regime that meets the species' ecological requirements and promotes its recovery. • Investigate the impacts of existing and potential threats and identify management actions.
Restoration and/or revegetation *	• Undertake restoration and/or revegetation to increase habitat suitability and/or create new habitat areas.
Survey and monitoring	• Monitor populations at known sites and other suitable locations to assess distribution, population trends and habitat condition. • Monitor the impact of threats to inform management interventions. • Undertake targeted field surveys to confirm the extent of all known populations and seek to discover previously undetected populations based on predicted habitat and ecological information.

**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
Conservation management planning	• Known records of Mallacoota Burrowing Cray are highlighted in input to relevant operational plans.
Develop, update and apply forestry protections	• The risk of forestry operations was considered for this species in 2020 under the Victorian Government Threatened Species and Communities Risk Assessment. Additional permanent protections were not found to be required. • The species has a current species-specific prescription in the Code: – At known sites within the East Gippsland Forest Management Area: Apply a 100 m buffer from each bank for 1 km upstream and 1 km downstream of

Past action	Description
	known Mallacoota Burrowing Crayfish sites. Avoid road construction and stream crossings within these stream buffers.
Survey and monitoring	• Research was undertaken to identify how far surface runoff (which carries sediment) travels in different environmental conditions, such as different vegetation types, before it is absorbed into the ground. This work led to new buffer widths that take into consideration vegetation type, likely species-specific sensitivity to sediment, rainfall intensity, and waterway type. • Surveys have been undertaken occasionally since 2012 to confirm the continuing presence of Mallacoota Burrowing Crayfish at known locations, and to check on its status following the 2019-20 fires.

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

- Mallacoota Burrowing Crayfish Species Forecast Report
- Threatened Species Assessment report – Mallacoota Burrowing Crayfish (*Engaeus mallacoota*)
- Code of Practice for Timber Production 2014
- Threatened Species and Communities Risk Assessment
- Victoria's changing climate – drivers and impacts of climate change in Victoria
- Commonwealth Threat Abatement Plans
- Genetic Risk Index
- 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 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 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 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 plants and animals, 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.

© The State of Victoria Department of Energy, Environment and Climate Action August 2023

This work is licensed under a Creative Commons Attribution 4.0 International licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Energy, Environment and Climate Action (DEECA) logo. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/

ISSN 1448-9902 **(online)**

Disclaimer

This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Accessibility

If you would like to receive this publication in an alternative format, please telephone the DEECA Customer Service Centre on 136186, email customer.service@delwp.vic.gov.au or via the National Relay Service on 133 677 www.relayservice.com.au. This document is also available on the internet at www.environment.vic.gov.au