Action statement

Flora & Fauna Guarantee Act 1988

Orbost Spiny Crayfish *(Euastacus diversus)*

Taxon ID: 1635

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

Orbost Spiny Crayfish. Image by Tarmo A. Raadik.

Orbost Spiny Crayfish Victorian Biodiversity Atlas (VBA) records since 1970. See NatureKit for an interactive map.

Conservation Status

Endangered

Listing criteria: 4.1.2(a),(b)(i,ii,iii,iv,v) of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- The Orbost Spiny Crayfish's 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
  - its area of occupancy; and
  - the area, extent or quality of habitat; and
  - the number of locations or subpopulations; and
  - the number of mature individuals.

Corresponding International Union for the Conservation of Nature (IUCN) criteria:

B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,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 Orbost Spiny Crayfish Species Forecast Report.

Threats

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

Threat	Description
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.
Altered hydrology	
Altered water regime	• Changes to flow or water regimes which do not align with the needs of the Orbost Spiny Crayfish may impact habitat suitability, recruitment and/or mortality, and ultimately site occupancy. • Earthworks that alter drainage patterns or impact creek bank integrity and water flow, may contribute to drying or alteration of suitable habitat for Orbost Spiny Crayfish.
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.
Fire	
Altered fire regimes	• A hotter, drier climate may increase the likelihood, frequency, and/or intensity of fire impacting the species' habitat, including alterations to catchment hydrology, with the potential to reduce habitat extent and/or condition. • Fires (including planned burns) can result in habitat degradation and mortality, including through alterations to hydrology. • Siltation and flows of debris along waterways following fire events cause habitat degradation, which is exacerbated during high intensity rainfall events.
Emergency response	• Some emergency response activities can inadvertently lead to alterations in habitat, vegetation structure, flows or erosion, and mortality of individuals. • Fire retardant can release chemicals into Orbost Spiny Crayfish habitat which may be toxic to the species.
Fire management activities	• Fire management operations such as creation of fuel breaks (soil disturbance, slashing) may remove habitat, cause mortality of individuals. • The Orbost Spiny Crayfish is vulnerable to mechanical disturbance from heavy machinery and increased sediment inputs from roads or tracks.

Threat	Description
Introduced species	
Introduced fish	• Introduced fish species, including Brown Trout (*Salmo trutta*) and Redfin Perch (*Perca fluviatilis*), can degrade habitat, impact water quality, disrupt ecosystem function, and/or impact directly on individuals through predation, and competition for resources.
Introduced herbivores	• Introduced herbivores degrade habitat through herbivory, trampling, wallowing, pugging of wet soils, increasing nutrient loads, erosion of waterway edges, and increasing the accessibility of habitat to introduced predators and/or plants. • Of particular concern to Orbost Spiny Crayfish are feral pigs (*Sus scrofa*), feral horses (*Equus caballus*) and deer species including Sambar deer (*Cervus unicolor*), and Fallow Deer (*Dama dama*).
Introduced predators	• Predation by foxes (*Vulpes vulpes*) and feral cats (*Felis catus*) contributes to mortality of native species.
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 the persistence of the Orbost Spiny Crayfish. • Riparian vegetation is important for bank stabilisation, as a filter for contaminants (sediment particularly), and as a source of organic debris which provides energy in addition to instream habitat. • Loss or degradation of riparian vegetation can alter the light and temperature of streams, contribute to soil erosion, stream bank damage, increased contaminant input to streams (including siltation and sedimentation), damage to crayfish burrows and increase exposure of Orbost Spiny Crayfish to predators.
Forestry operations	• Timber harvesting operations in native forest can contribute to erosion, and sedimentation in the species habitat, which may cause mortality of individuals. • Timber harvesting operations in native forest within the species' catchment can alter hydrological regimes causing habitat degradation or loss.
Livestock	• Livestock can cause habitat degradation through the combined effects of herbivory, trampling, soil compaction, soil erosion, pugging of wet areas, and excess nutrient loads.
Human disturbance	
Recreational fisheries	• Incidental mortality can occur through by-catch and illegal translocation/stocking of introduced trout into the species' habitat.
Road and track construction or maintenance	• Roadside populations are vulnerable to loss or damage to individuals and habitat, because of direct impacts of road construction and maintenance works (e.g., grading/mowing/slashing/lopping/herbicide use) and indirect impacts from associated run-off, soil erosion, and potential weed and pathogen introduction.

Threat	Description
Population dynamics	
Loss of genetic diversity	• Small, greatly reduced, and/or isolated populations are at increased risk of loss of genetic diversity, which leads to a heightened risk of reduced recruitment and/or increased mortality rates.
Small population size	• Small populations have lower resilience to the risk of stochastic events, and increased risk of genetic decline.
Pollutants and toxicants	
Pesticides	• Spray drift from herbicide application in the riparian zone to control introduced plants may lead to loss of or damage to habitat and may impact recruitment and cause mortality of the Orbost Spiny Crayfish.

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 Orbost Spiny Crayfish's range and/or extent, by providing opportunities for natural or assisted movement.
- Increase knowledge of biology, ecology, distribution, demography, emerging threats, and conservation requirements.
- Support community participation and improve awareness of the Orbost Spiny 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 Orbost Spiny Crayfish distribution data and ecological information is available and considered in fire management activities. • Undertake biodiversity values check prior to fuel management in areas of the Orbost Spiny Crayfish 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 Orbost Spiny Crayfish. • Work with key stakeholders to reduce threats from human disturbance and pesticides and encourage behaviours that support a healthy environment.

Action	Description
	• Install signs to inform the community of the presence and importance of the Orbost Spiny Crayfish. • Increase landholder awareness of the Orbost Spiny Crayfish, and the impacts of livestock grazing to the species and its habitat. Provide guidance on the changes to grazing that may be required, such as fencing off riparian zones, to support the species recovery.
Control introduced fish	• Implement and maintain effective control of introduced fish in priority areas.
Control introduced herbivores *	• Implement and maintain effective control of introduced herbivores including feral pigs, feral horses, and deer in priority areas.
Control introduced predators *	• Implement and maintain effective control of feral cats and foxes in priority areas.
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. • Apply the following additional permanent protection as recommended in the Victorian Government Threatened Species and Communities Risk Assessment (TSCRA): – *Forest zoning amendment* Within the East Gippsland Regional Forest Agreement Region, the Secretary will establish a Special Management Zone to the catchment of the Orbost Spiny Crayfish with the following conditions: Where one or more individuals of Orbost Spiny Crayfish have been verified post 2019-20 bushfire: > Environments with high soil absorption capacity: o Apply 40 m buffers either side of all mapped and unmapped permanent streams and temporary streams upstream and downstream of Orbost Spiny Crayfish sites to the watershed boundary (on average 1 km but responsive to local topography); o Apply 30 m buffers plus 10 m filter strips to either side of drainage lines upstream and downstream of Orbost Spiny Crayfish sites to the watershed boundary (on average 1 km but responsive to local topography). > Environments with low soil absorption capacity: o Apply 60 m buffers either side of all mapped and unmapped permanent streams and temporary streams upstream and downstream of Orbost Spiny Crayfish sites to the watershed boundary (on average 1 km but responsive to local topography); o Apply 40 m buffers plus 20 m filter strips to either side of drainage lines upstream and downstream of Orbost Spiny Crayfish sites to the watershed boundary (on average 1 km but responsive to local topography). > No new road, snig track, in-coupe road, coupe driveway, coupe infrastructure or stream crossing shall be constructed within or through any buffer without an approved exemption from the Secretary.

Action	Description
Ex-situ management	• Establish and maintain ex-situ populations in suitable secure sites, to service the conservation objectives of the species, if required, particularly after major events such as fire or drought.
Genetic rescue	• Investigate the need and options for managing risks from stochastic events and improving resilience through enhancing genetic exchange, via physically linking populations, translocation, or genetic management in ex-situ setting where required.
Manage built infrastructure	• Consider the requirements of the Orbost Spiny Crayfish in the placement and design of built infrastructure near key habitat. Include planning for appropriate buffers to limit off-site impacts of infrastructure.
Manage impacts from natural disaster events	• Identify and implement recovery actions for vulnerable populations impacted by natural disaster events (e.g., significant bushfire or flood events).
Manage road and track works	• Protect habitat from disturbances caused by road, track, bridge and ford construction and maintenance, particularly from heavy machinery and off-target impacts of chemical use.
Protect key habitat	• Identify opportunities to manage threats of land use change and development, including programs to encourage protection and management of remaining habitat areas. • Minimise alterations to groundwater and surface water hydrological regimes upstream or in surrounding landscapes.
Research	• Investigate the impacts of existing and potential threats and identify management actions. • Increase understanding of genetic risks and management options. • Increase understanding of breeding biology and fecundity, lifespan, diet, movement, burrow creation and placement in landscape and other key knowledge gaps that currently prevent translocation.
Restoration and/or revegetation *	• Undertake restoration and/or revegetation to increase habitat suitability and/or create new habitat areas. • Habitat restoration activities include the rehabilitation of degraded riparian vegetation where the Orbost Spiny Crayfish is known to occur.
Survey and monitoring	• 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. • 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, including following major events such as fire or drought. • Identify potential translocation sites to establish new subpopulations or bolster existing ones.
Translocation	• Design and implement a translocation program to meet the objectives of the action statement, if required. Particularly consider the role of translocation after major events such as fire or drought.

**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
Develop, update, and apply forestry protections	• The Orbost Spiny Crayfish has a current species-specific prescription in the Code: – In the East Gippsland Forest Management Area: Apply a protection area extending 100m from each bank for 1 km upstream and 1 km downstream of detection sites. Avoid constructing new roads and stream crossings within the protection area. Manage nearby regeneration burns to ensure the protection area is not burnt. Note: The Secretary intends to review this strategy when 20 sites are established. • The risk of forestry operations was assessed for the Orbost Spiny Crayfish in 2020 under the Victorian Government TSCRA. Additional permanent protections were recommended in 2022 and are being implemented.
Manage impacts from natural disaster events	• Following widespread habitat impacts from the 2019-20 bushfires, some Orbost Spiny Crayfish were rescued from the wild as part of emergency extractions and temporarily housed in an aquarium facility at the Arthur Rylah Institute. Orbost Spiny Crayfish rescued from the wild were returned to their original homes in September 2020 once habitat conditions improved.
Survey and monitoring	• A rapid on-ground assessment of the Orbost Spiny Crayfish was undertaken following the 2019-20 bushfires and management interventions identified.

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

- Orbost Spiny Crayfish Species Forecast Report
- Threatened Species Assessment report – Orbost Spiny Crayfish (*Euastacus diversus*)
- Commonwealth Species Profile and Threats database
- Threatened Species and Communities Risk Assessment
- Code of Practice for Timber Production 2014
- Victoria's changing climate – understanding the 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.

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