Action statement

Flora & Fauna Guarantee Act 1988

South Gippsland Spiny Crayfish *(Euastacus neodiversus)*

Taxon ID: 1637

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

South Gippsland Spiny Crayfish. Image by Tarmo A. Raadik.

South Gippsland 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,v) of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- The South Gippsland Spiny Crayfish's geographic distribution is highly restricted; and
- the distribution of the population or habitat is severely fragmented; 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 South Gippsland 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 to lead to habitat changes, and impact recruitment and/or mortality rates.
Pollutants and toxicants	
Pesticide use	• Pesticides (including chemicals used to control plants, fungi, invertebrates and vertebrates) can impact recruitment and/or mortality rates, may alter habitat or ecosystem function, and may impact persistence. • Spray drift or off-target application of pesticides may lead to loss of, or damage to, habitat and may impact recruitment and cause mortality of the South Gippsland Spiny Crayfish.
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 South Gippsland Spiny Crayfish persistence. • Riparian vegetation is important for bank stabilisation, filtering contaminants from the nearby catchment, and provision of food and 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 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.

Plantation operations	• Establishment of new plantations and operations in existing plantations may cause run-off from track networks and increase the risk of sedimentation that may damage the species habitat and cause mortality of individuals. Catchment hydrology may be further altered by plantation operations reducing the amount of available habitat for the species. These impacts may be exacerbated by climate change or influenced by other activities in the catchment. • Pesticide spray drift may damage habitat and result in mortality of individuals.
Fire	
Altered fire regimes	• A hotter, drier climate may increase the likelihood, frequency, and/or intensity of fire impacting South Gippsland Spiny Crayfish 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	• Emergency response activities such as the use of heavy machinery within or across drainage lines and in riparian zones removes vegetation and creates soil disturbance that can facilitate erosion and sedimentation and cause mortality of individuals. • Fire retardant can release chemicals into South Gippsland 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) and mechanical disturbance from heavy machinery may remove habitat, cause mortality of individuals.
Introduced species	
Deer	• Introduced deer species including Sambar deer (*Cervus unicolor*), Red Deer (*Cervus elaphus*) and Fallow Deer (*Dama dama*) degrade habitat through herbivory, wallowing, trampling, pugging of wet soils, increasing nutrient loads, erosion of waterway edges, and increasing the accessibility of habitat to introduced predators and/or plants.
Domestic pets	• Roaming domestic pets (e.g., dogs) may cause disturbance and mortality. This is a particular issue for spiny crayfish where waterways with occupied habitat are surrounded by farmland.
Introduced fish	• Introduced fish species, such as Brown Trout (*Salmo trutta*), can degrade habitat, impact water quality, disrupt ecosystem function, and/or impact directly on individuals through predation, and competition for resources.
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	• The South Gippsland Spiny Crayfish is vulnerable to sediment inputs from roads or tracks. • 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.
Altered hydrology	
Altered water regime	• Changes to flow or water regimes which do not align with the South Gippsland Spiny Crayfish's needs may impact habitat suitability, recruitment and/or mortality, and ultimately site occupancy. • The construction of dams can flood suitable habitat or remove habitat by reducing water levels in natural streams. The release of water from dams causes fluctuating water levels in the riparian zone. Pumping ground water to store in dams reduces the water table level. • Earthworks that alter drainage patterns or impact creek bank integrity and water flow, may contribute to drying of or alteration to suitable habitat for South Gippsland 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.
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.
Population fragmentation	• Fragmentation of once connected populations into smaller, isolated populations increases the risk of genetic decline and associated changes to recruitment and/or mortality rates.
Small population size	• Small populations have lower resilience to the risk of stochastic events, and increased risk of genetic decline.

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 South Gippsland 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 South Gippsland 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 South Gippsland 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 South Gippsland 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 South Gippsland Spiny Crayfish. • Work with key stakeholders to reduce threats and encourage behaviours that support a healthy environment. • Increase landholder awareness of the South Gippsland 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 recovery of the South Gippsland Spiny Crayfish.
Control deer *	• Implement and maintain effective control of deer in priority areas.
Control introduced fish	• Implement and maintain effective control of introduced fish in priority areas.
Develop, update and apply forestry protections	• Maintain prescriptions for the South Gippsland Spiny Crayfish 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. • Incorporate measures to protect relevant environmental values into timber harvesting plans for plantations.
Ex-situ management	• Establish and maintain ex-situ populations in suitable secure sites, to service the conservation objectives of the South Gippsland Spiny Crayfish, if required.
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 an ex-situ setting where required.
Manage built infrastructure	• Consider South Gippsland Spiny Crayfish requirements 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).

Action	Description
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.
Minimise and mitigate the impacts of pollution	• Minimise or mitigate the impacts of pollution, by identifying and implementing available management options to address the source, transfer pathways, and impact of pollutants to the South Gippsland Spiny Crayfish.
Permanent protection *	• Investigate incentives, voluntary agreements, covenants, and other permanent protection measures to protect and restore habitat.
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 South Gippsland Spiny Crayfish is known to occur.
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. • Identify potential translocation sites to establish new populations or bolster existing ones.
Translocation	• Undertake conservation translocations to establish new populations, re-establish previous populations, or bolster declining populations if required to meet the objectives of the action statement.

**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
Avoid and/or mitigate impacts associated with fire management	• Impacts associated with fire management activities have been managed through a values checking and risk mitigation process for planned burning and roading activities.
Community engagement and awareness	• Liaison with private plantation managers undertaken from 2012 to 2016 to protect habitat of South Gippsland Spiny Crayfish within plantations. • Relevant government agency staff working in the known range of the South Gippsland Spiny Crayfish have been made aware of the species and asked to report suspected records.
Conservation management planning	• Ongoing input into park, reserve or land management plans to ensure appropriate habitat management prescriptions are included.
Develop, update and apply forestry protections	• The South Gippsland Spiny Crayfish has a current species-specific prescription in the Code: – In the Gippsland Forest Management Areas: Develop management actions to protect South Gippsland Spiny Crayfish habitat at sites in State Forest. • The risk of forestry operations was assessed for the South Gippsland Spiny Crayfish in 2020 under the Victorian Government Threatened Species and Communities Risk Assessment.
Research	• Effects of agricultural and forest management practices on crayfish populations investigated including monitoring of the effectiveness of buffer strips in protecting crayfish. • Investigation of critical habitat tolerances, hydrological parameters and catchment-based characteristics undertaken in 2015-2016.
Survey and monitoring	• Streams in catchments most likely to contain populations of South Gippsland Spiny Crayfish were surveyed to improve knowledge of the distribution and abundance of the species. • Monitoring of known populations of South Gippsland Spiny Crayfish was undertaken in 2012-2013 to gather information about its ecology.

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

- South Gippsland Spiny Crayfish Species Forecast Report
- Threatened Species Assessment report – South Gippsland Spiny Crayfish (*Euastacus neodiversus*)
- 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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