Action statement

Flora & Fauna Guarantee Act 1988

East Gippsland Galaxias *(Galaxias aequipinnis)*

Taxon ID: 528521

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

East Gippsland Galaxias. Image by Tarmo A. Raadik.

East Gippsland Galaxias Victorian Biodiversity Atlas (VBA) records since 1970.See NatureKit for an interactive map.

Conservation Status

Critically Endangered

Listing criteria: 3.1.1; 3.1.2(a),(b)(i,ii,iii,iv,v) of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- The East Gippsland Galaxias has undergone, is suspected to have undergone, or is likely to undergo in the immediate future, a very severe reduction in population size.
- Its geographic distribution is extremely restricted; and
- the distribution of the population or habitat 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 locations or subpopulations; and
  - the number of mature individuals.

Corresponding International Union for the Conservation of Nature (IUCN) criteria: A3ce+A4ce; B1ab(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 East Gippsland Galaxias Species Forecast Report.

Threats

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

Threat	Description
Introduced species	
Introduced fish	• Introduced fish can degrade habitat, impact water quality, disrupt ecosystem function, and/or impact directly on individuals through predation and competition for resources. • Predation by, and to a lesser extent competition with, introduced trout is a major threat to East Gippsland Galaxias. Incursion of introduced trout into the habitat of East Gippsland Galaxias has been known to cause the reduction in distribution and abundance of the species. Further incursion could lead to rapid population decline and species extinction.
Introduced herbivores	• Introduced herbivores including deer species (Sambar Deer (*Cervus unicolor*), Red Deer (*Cervus elaphus*) and Fallow Deer (*Dama dama*)) and feral pigs (*Sus scrofa*) can degrade water quality and habitat through herbivory, trampling, pugging of wet soils, increasing nutrient loads and erosion of waterway edges.
Fire	
Altered fire regimes	• Frequent or intense fire and resultant loss of vegetation in the catchment and riparian zone can increase sediment inflows. This can smother fish, eliminate instream habitat such as pools and gaps between rocks, impact macroinvertebrate food availability, and change water chemistry and temperature, degrading habitat and leading to mortality. Post-fire debris flows may also create new barriers to movement. • A hotter, drier climate may increase the likelihood or frequency of fire impacting habitat, with the potential to reduce habitat extent and/or condition. • As a result of the small, fragmented distribution of the East Gippsland Galaxias, extreme bushfire events and subsequent sedimentation inputs to habitat could lead to loss of populations.
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 East Gippsland Galaxias 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 and cause mortality of individuals.

Threat	Description
Climate Change	
Altered rainfall and temperature regimes	• Reduced annual rainfall and increased maximum temperatures will reduce the availability of groundwater outflow and therefore surface water flow, impacting refuge habitat, and affecting spawning cues.
Extreme weather events	• Climate change may increase the frequency and intensity of storms and flooding, increasing erosion and sedimentation, impacting flow regimes and habitat condition, and potentially causing mortality events. • An increased frequency and intensity of flooding could drown out instream barriers, potentially facilitating introduced fish incursion.
Increased frequency and/or length of droughts	• Drying and warming of the environment, including droughts, will impact on flow regimes which may to lead to a reduction in habitat and impact recruitment and/or mortality rates.
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 alter water temperatures, contribute to soil erosion, stream bank damage and siltation of streams, causing damage to East Gippsland Galaxias habitat and potentially reducing food availability, refuge and spawning habitat. • As a result of the small, fragmented distribution of the East Gippsland Galaxias, local habitat modifications and degradation could threaten populations.
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.
Human disturbance	
Recreational fisheries	• Illegal translocation/stocking of introduced trout into East Gippsland Galaxias habitat has the potential to cause species' extinction.
Road and track construction or maintenance	• East Gippsland Galaxias is vulnerable to sediment inputs from roads or tracks. • Construction and maintenance of waterway crossings, roads and tracks expose the East Gippsland Galaxias and habitat to disturbance from run-off, soil erosion, siltation, off-target impacts of herbicide use and weed and pathogen introduction, in the immediate area and downstream. • Construction of new roads and tracks that provide access into previously remote streams can increase the risk of illegal stocking of introduced trout into habitat.
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.

Threat	Description
	• Genetic diversity within East Gippsland Galaxias populations is low and gene flow is highly constrained between populations, causing inbreeding and potential loss of fitness, adaptability and resilience.
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.
Pathogens and disease	
Disease (other)	• Threatened species with small populations and/or reduced genetic diversity are more susceptible to disease risk, both from known and new/emerging diseases. • Metacercarial cysts, the second life stage of parasitic flatworms (flukes), have been reported in the skin and fins of galaxiids. The prevalence of metacercarial cysts in the East Gippsland Galaxias population is unknown and requires further investigation.
Pollutants and toxicants	
Pesticide use	• Spray drift or off-target damage from pesticide application within or immediately adjacent to habitat for East Gippsland Galaxias may lead to loss of or damage to habitat and impacts to populations.

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.
- Establish at least five new viable populations within its historic range.
- Increase knowledge of biology, ecology, distribution, demography, emerging threats, and conservation requirements.
- Support community participation and improve awareness of the East Gippsland Galaxias 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
Apply decision support tools for population management	• Apply relevant decision support tools (e.g., Population Viability Analysis, Specific Needs Assessment) to inform population and threat management decisions.
Avoid and/or mitigate impacts associated with fire management	• Ensure that East Gippsland Galaxias 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 East Gippsland Galaxias' habitat, to confirm treatment suitability and timing.
Community engagement and awareness	• Continue to raise land manager and broader community awareness of the importance of protecting habitat and managing threats. • Work with key stakeholders to reduce threats and encourage behaviours that support a healthy environment. • Continue to identify, promote and support opportunities for community involvement in conservation efforts.
Compliance and enforcement	• Undertake risk-based compliance and enforcement activities to limit the impacts of illegal translocation/stocking of introduced fish and off-road vehicle use to the East Gippsland Galaxias.
Conservation management planning	• Review and update, or develop, relevant plans or planning tools to support conservation management of East Gippsland Galaxias.
Control introduced fish	• Implement and maintain effective control of introduced fish in priority areas. Prevent any further releases of introduced trout into catchments where East Gippsland Galaxias currently occur, and where reintroductions are prioritised.
Control introduced herbivores *	• Implement and maintain effective control of introduced herbivores, including deer and feral pigs, in priority areas.
Develop, update and apply forestry protections	• Where relevant, incorporate species-specific protection measures into plans and permits relating to timber harvesting operations in native forest on private land.
Ex-situ management	• Establish and maintain ex-situ populations in suitable secure sites, to service the conservation objectives of the East Gippsland Galaxias, 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.
Improve habitat connectivity	• Restore habitat and/or provide appropriate engineering solutions to improve connectivity between subpopulations where feasible.
Manage barriers to movement	• Maintain existing instream barriers (natural or artificial) and construct new instream barriers, where appropriate, to prevent incursion of introduced fish predators. • Undertake routine inspection and maintenance of barrier integrity to ensure continued effectiveness. • Consider the East Gippsland Galaxias needs and distribution in decision making around the establishment of new potential barriers to movement.

Action	Description
Manage impacts from natural disaster events	• Identify and implement recovery actions for vulnerable populations impacted by natural disaster events (e.g., significant wildfire or flood events) such as reconnaissance of priority sites, emergency extractions, translocations, ex-situ management, and the return of fish once conditions improved.
Manage public access	• Manage access to key habitat for East Gippsland Galaxias to limit the risks of human disturbance (e.g., from recreational impacts).
Manage road and track works	• Ensure distribution data are considered in planning road and track works. • Protect habitat from disturbances caused by track, bridge and ford construction and maintenance. • Investigate and mitigate sources of sediment from roads and tracks into streams.
Protect key habitat	• Identify and protect habitat areas that provide important refugia from disturbance events (e.g., fire) or significant weather events (e.g., drought). • Minimise alterations to hydrological regimes upstream or in surrounding landscapes. • Maintain vegetation cover and health along the banks and riparian zone of streams within catchments where East Gippsland Galaxias occurs.
Research	• Investigate barriers to translocation success to inform management. • Investigate ecological and life history traits of the East Gippsland Galaxias • Investigate population genetic structure, levels of genetic diversity and minimum viable population size for successful self-sustaining subpopulations. • Investigate techniques for captive maintenance, breeding, on-growing, ex-situ genetic mixing and translocation. • Investigate development of a genetic survey probe for galaxiids to improve efficacy of eDNA sampling. • Identify drought refuges and options to enhance the resilience of the current habitat or support the provision of new habitat that would be suitable for the species under climate change scenarios. • Investigate the susceptibility of endemic diseases on East Gippsland Galaxias (e.g., through targeted or passive surveillance and, if possible, infectivity trials).
Restoration and/or revegetation *	• Undertake restoration and/or revegetation to increase habitat suitability and/or create new habitat areas. • Restore vegetated buffers along the stream drainage network (wet or dry, stream channel to headwater drainage lines), within catchments where the East Gippsland Galaxias occurs.
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, habitat condition, and the impact of threats to inform management interventions.

Action	Description
	• 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
Control introduced fish	• Introduced trout detection and removal undertaken at locations along the Arte River, including in the Little Arte River, annually over the past decade.
Develop, update and apply forestry protections	• The risk of forestry operations was assessed for the East Gippsland Galaxias in 2020 under the Victorian Government Threatened Species and Communities Risk Assessment. Additional permanent protections were not found to be required.
Research	• Tissue clips taken as part of genetic research in 2014-15. • A specific needs assessment was undertaken for the mountain galaxias species complex following the 2019-20 bushfires. • A genomic single nucleotide polymorphism analysis of the mountain galaxias species complex in Victoria was published in 2022. • Investigation into management options to help ensure the persistence of threatened galaxiids is underway.
Survey and monitoring	• Survey to determine abundance/extent of the species has occurred annually over the past decade • Survey to locate additional populations of the species has occurred annually over the past decade. • Location of waterfall barriers on Arte and Little Arte rivers identified in 2014-15.
Translocation	• One translocation has been conducted from the Arte River to a small tributary of the Goolengook River in 2015, although monitoring has indicated no sign of successful breeding and no individuals were recovered following the 2019-20 bushfires. Further research is required to understand the barriers to translocation success. • Following the 2019-20 bushfires, one hundred individuals were captured in February 2020, held in temporary housing and released back to the capture site in September 2020.

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

- East Gippsland Galaxias Species Forecast Report
- Threatened Species Assessment report – East Gippsland Galaxias (*Galaxias aequipinnis*)
- Commonwealth Species Profile and Threats database
- Threatened Species and Communities Risk Assessment
- Victorian Deer Control Strategy
- Victoria's changing climate – understanding the impacts of climate change in Victoria
- Commonwealth Threat Abatement Plans
- Code of Practice for Timber Production 2014
- 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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Accessibility

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