Action statement

Flora & Fauna Guarantee Act 1988

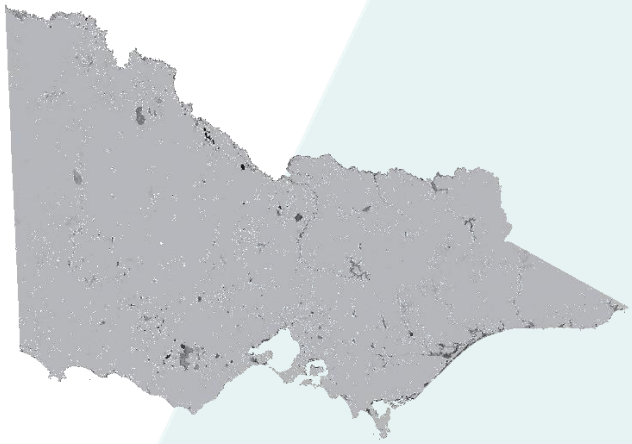
Southern Purple-spotted Gudgeon *(Mogurnda adspersa)*

Taxon ID: 5058

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 Purple-spotted Gudgeon. Image by Doug Gimesy.



This habitat distribution model displays the indicative range of the Southern Purple-spotted Gudgeon based on occurrence records and likely habitat. See NatureKit for an interactive map. The Southern Purple-spotted Gudgeon also occurs outside of Victoria.

Conservation Status

Critically endangered

Listing criteria: 3.1.1; 3.1.2(a),(b)(i,ii,iv,v); 3.1.3(b)(i); 3.1.4 of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- the Southern Purple-spotted Gudgeon 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
- 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 area of occupancy; and
    - the area, extent or quality of habitat; and
    - the number of locations or subpopulations; and
    - the number of mature individuals; and

- the total number of mature individuals is extremely low, the number is likely to continue to decline and most of the individuals are in one subpopulation.

Corresponding International Union for the Conservation of Nature (IUCN) criteria: A3ce+4ce; B1ab(i,ii,iv,v) +2ab(i,ii,iv,v); C2a(ii); D.

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 Purple-spotted Gudgeon Species Forecast Report.

Threats

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

Threat	Description
Altered hydrology	
Altered wetland water regime	• Sudden or sustained lowering of water levels flowing into wetlands can result in habitat degradation through inadequate inundation of aquatic edge habitats essential to this species. Climate change will increase the risk of altered flows. • Water regulation/fluctuations from irrigation can impact spawning behaviour and pose a major threat to reproduction, leading to recruitment failure.
Climate change	
Extreme weather	• Storms and flooding can result in habitat degradation through poor water quality. When organic matter brought in with the floodwaters decomposes, it causes the water to become anoxic water (blackwater), which can lead to mortality of both adults and juveniles.
Increased frequency and/or length of droughts	• Increased frequency and length of droughts will further reduce the availability of water quantity and quality, resulting in habitat degradation or mortality and drought stress such as reduced recruitment.
Introduced species	
Introduced fish	• Competition for resources and predation by introduced fish species, such as Redfin Perch (*Perca fluviatilis*) and Eastern Gambusia (*Gambusia holbrooki*) has been implicated as contributing to the decline of small native species such as the Southern Purple-spotted Gudgeon. • European Carp (*Cyprinus carpio*) can modify the aquatic habitat by increasing turbidity, and impacting aquatic vegetation.
Habitat loss, degradation or modification	
Livestock	• Livestock with access to riparian zones can degrade vegetation and increase the risk of sedimentation and siltation of instream habitat.

Threat	Description
Vegetation clearing or damage	• In some cases, herbicides or heavy machinery are used in drains and irrigation channels, to remove aquatic vegetation. This may cause mortality to individuals and reduce habitat suitability. • Clearing of riparian and catchment vegetation results in habitat loss or degradation and can lead to siltation or smothering of habitat in waterways.
Population dynamics	
Fragmentation	• The Reedy Lakes population is genetically isolated from the populations elsewhere in the Murray-Darling Basin and is at risk of genetic decline due to isolation and may develop inbreeding depression.
Pollutants and toxicants	
Pesticides	• Pesticides used in agricultural areas can drift into waterways, or be carried into waterways through surface flow, and may cause mortality of fish and degradation of habitat.
Knowledge	
Insufficient knowledge of threats	• Inadequate knowledge of key aspects of the species' biology and ecology is a major limiting factor for conservation management.

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, increase genetic fitness and minimise future population decline.
- Establish at least three 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 Southern Purple-spotted Gudgeon 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
Build resilience through translocation and/or gene mixing	• Build resilience by gene mixing through translocation of individuals among subpopulations. • Develop a translocation plan. Following captive breeding, trial reintroductions into suitable habitat within the species' current range, and into existing subpopulations.

Action	Description
	• When risk of population loss is high due to stochastic events (e.g., drought, chemical spills, flooding etc.), undertake salvage translocation by removing a proportion of individuals to maintain in captivity in aquaculture facilities or natural refuges (appropriate farm dams) until the risk abates and fish can be returned or translocated.
Community engagement and awareness	• Increase community knowledge and awareness of the Southern Purple-spotted Gudgeon across its range. • Increase landholder and land manager awareness of the species, its ecological requirements, and threats from pesticides, livestock grazing in riparian zones, and clearing of riparian and catchment vegetation. • Provide guidance to landholders on approaches to minimise impacts from pesticides and grazing on the Southern Purple-spotted Gudgeon, for example integrated pest management and excluding grazing from riparian zone.
Conservation/management planning	• Prepare a detailed site or region-specific plan to guide actions addressing the species and its habitat requirements for conservation management.
Control introduced fish	• Implement effective management and control of introduced fish species.
Ex-situ management	• Develop an ex-situ breeding plan for the species, to guide improvement, and include consideration of how captive breeding can service translocation priorities.
Manage environmental water	• Investigate the provision of a secure water supply to maintain drought refuges for the species. Where necessary provide adequate 'emergency water' (i.e., quantity, quality, seasonality). • Investigate the provision of an appropriate flow regime that supports habitat. (i.e., frequency, duration and timing of inundation, and wetland extent and rate of water level change).
Research	• Investigate the biology and ecology of the larval and juvenile phase in wetland environments to inform management actions. Information gaps to be addressed include spawning period, key spawning areas, key egg deposition sites, habitat and water quality requirements/thresholds, and the impact of predators (in relation to predator and habitat density). • Undertake population genetic assessment to inform population genetic diversity and evolutionary potential, and what genetic rescue approaches may be applicable.
Restoration and/or revegetation	• Restore riparian vegetation. • Restore or augment the aquatic habitat by planting suitable aquatic plant species along edge habitats.
Restore and/or create habitat	• Re-introduce woody debris and hard substrates for spawning, such as rocks, into known locations of the species.
Survey and monitoring	• Monitor populations and habitat at known sites and other suitable locations, including irrigation channels and drains which may be subject to vegetation clearing, to assess population trends and habitat condition and potential translocation sites. • Use a combination of eDNA techniques and conventional monitoring to improve knowledge of the species' distribution and abundance in areas where the

Action	Description
	species occurs, to inform management priorities and actions. Will also assist in the selection and monitoring of suitable translocation sites.

**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
Ex-situ management	• There are currently three active captive breeding programs using the species from Reedy Lakes genetics project. • Southern Purple-spotted Gudgeon was identified as a priority species for an ex-situ breeding program at a new conservation facility being built at Snobs Creek Hatchery, near Eildon (with ex-situ bred fish due for release in 2024). • Emergency salvage was undertaken to establish an ex-situ insurance population following the 2022-23 Murray River flooding. Individuals are in a surrogate dam and are yet to be returned.
Research	• Population genetics were undertaken on the Kerang populations. These were found to be genetically diverse with little inbreeding (i.e. a diverse metapopulation).
Restoration and/or revegetation	• Habitat, primarily aquatic plants, is being re-established in Ornamental Lakes following the 2022-23 Murray River flooding and salvaged fish will be returned once there is suitable habitat quality.
Survey and monitoring	• Post-stocking monitoring has occurred at eight Victorian sites in Mildura, Kerang and Greater Bendigo during 2022 and 2023.
Translocation	• Conservation stocking has occurred at 10 locations in Victoria including Mildura, Benalla, Kerang and Greater Bendigo in 2021 and 2022. • Southern Purple-spotted Gudgeon were salvaged from the 2022 flooding/blackwater event in Mildura and taken to Snobs Creek Hatchery.

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 Purple-spotted Gudgeon Species Forecast Report
- Threatened Species Assessment report – Southern Purple-spotted Gudgeon (*Mogurnda adspersa*)
- Commonwealth Species Profile and Threats database
- Victoria's changing climate – understanding the impacts of climate change in Victoria
- Genetic Risk Index
- Commonwealth Threat Abatement Plans

- Flora and Fauna Guarantee Regulations 2020
- IUCN criteria summary

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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