# Action statement

*Flora & Fauna Guarantee Act 1988*

## Eltham Copper Butterfly *(Paralucia pyrodiscus lucida)*

**Taxon ID: 65003**

**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".**

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## Species and Distribution

Eltham Copper Butterfly. Image by Annie Hobby.

Eltham Copper Butterfly 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) and 4.1.3(b)(iii) of the Flora and Fauna Guarantee Regulations 2020.

This means that:

- the Eltham Copper Butterfly's geographic distribution is highly restricted; and
- the distribution of the population or habitat of the taxon 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 locations or subpopulations; and
  - the number of mature individuals.
- The total number of mature individuals is low, the number is likely to continue to decline and there are extreme fluctuations in the number of mature individuals.

**Corresponding International Union for the Conservation of Nature (IUCN) criteria**: B2(a),(b)(i,ii,iii,iv,v)+C2(b).

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 are provided in the Eltham Copper Butterfly Conservation Advice.

## Threats

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

| Threat | Description |
|---|---|
| **Habitat loss, degradation or modification** | |
| Vegetation clearing or damage | • Removal or damage to vegetation contributes to habitat loss. The impact of this threat is greatest in urban areas due to subdivision, roadworks and building construction, and some known populations have become locally extinct.<br>• Slashing of understorey and loss of diversity of understorey plant species is also a threat. |
| **Fire** | |
| Altered fire regimes | • A hotter, drier climate may increase the likelihood or frequency of fire impacting habitat, with the potential to reduce habitat extent and/or condition.<br>• The optimum fire regime for the species is not known, however, burning at 5 yearly intervals where the species occurs is considered detrimental to the larval food plant, Sweet Bursaria (*Bursaria spinosa*). |
| Bushfire | • Bushfires can result in mortality and habitat degradation. Important impacts can include the loss of key habitat features and food sources, and an increase in predation risks.<br>• Due to the small area of extent of some populations, bushfires have the potential to cause local extinctions. |
| Fire management activities | • Fire management operations such as creation and maintenance of fuel breaks (soil disturbance, slashing) may remove habitat, increase mortality, and reduce regeneration of the larval food plant, Sweet Bursaria. |
| **Human disturbance** | |
| Construction, development and/or infrastructure | • Construction and development may result in direct removal of habitat, or indirect impacts to habitat through changes to water regime, increased risk of weed incursion, and increased access to native habitats by introduced predators and domestic pets. |
| Illegal take | • Unauthorised take, trade and removal of the Eltham Copper Butterfly may contribute to reduced recruitment, increased mortality, and reduced population size. |
| Recreational activities | • Community members wishing to see the Eltham Copper Butterfly may inadvertently damage habitat or individuals, potentially impacting recruitment and mortality rates and/or persistence at the site.<br>• Increasing urbanisation close to habitat causes pressures such as increased visitation to reserves set aside for the Eltham Copper Butterfly. |

| Threat | Description |
|---|---|
| **Native species** | |
| Problematic native plants | • Increasing abundance, or area of occurrence, of some native plant species may impact habitat quality.<br>• Overgrowth of the mid-storey and canopy layers of vegetation may result in conditions that are unsuitable for ants of the genus *Notoncus.* These ants play a critical role in protecting the larvae of the Eltham Copper Butterfly. In addition, overgrowth can affect the butterfly's flight paths and basking areas.<br>• Rapid and thick regrowth of dogwood (*Cassinia* spp.) and wattles (*Acacia* spp.) after drought and fire may change habitat conditions and threaten the Eltham-Greensborough-Montmorency population. |
| **Climate change** | |
| Altered rainfall and temperature regimes | • Climate change, increasing temperature, altered rainfall and associated changes in soil moisture, are likely to magnify existing threats and may reduce the stability, extent, and condition of habitat. The Eltham Copper Butterfly is particularly vulnerable to these changes due to its very specific habitat requirements and sedentary nature.<br>• Changes in the butterfly's microhabitat may influence their feeding, development, growth rate and metabolic efficiency, given their ectothermic status. This may impact reproduction and/or mortality, and persistence at some sites.<br>• The host larval food plant Sweet Bursaria (*Bursaria spinosa*) requires frost to germinate, and under hotter and drier conditions, frosts are predicted to decline, resulting in lower germination rates for Sweet Bursaria, and likely local declines of this important habitat attribute. |
| **Introduced species** | |
| Introduced herbivores | • Introduced herbivores degrade habitat through herbivory, trampling, pugging of wet soils, increasing nutrient loads, erosion of waterway edges, and increasing the accessibility of habitat to introduced predators and introduced plants.<br>• Browsing and trampling of the larval food plant Sweet Bursaria by deer has the potential to decimate small, isolated Eltham Copper Butterfly populations and habitat.<br>• Grazing of newly germinated larval food plants by rabbits and hares has the potential to significantly reduce the number of juvenile Sweet Bursaria plants available to the butterfly. |
| Introduced invertebrates | • Urbanisation can lead to an increase in introduced invertebrate predators in Eltham Copper Butterfly habitat. This includes populations of European Honeybee (*Apis mellifera*) and European Wasp (*Vespula germanica*). |
| Introduced plants | • Introduced plants can directly compete for resources and reduce species abundance and diversity.<br>• Woody weeds such as Cape Broom (*Genista monspessulana*), Radiata Pine (P*inus radiata*) and Blackberry (*Rubus polyanthemus*) have the potential to outcompete the larval food plant Sweet Bursaria.<br>• Weedy annual grasses can pose a threat in areas that have been disturbed as dense understorey can affect Eltham Copper Butterfly flight and behaviour. |

| Threat | Description |
|---|---|
| | • Exotic perennial grasses inhibit germination of Sweet Bursaria and may have a detrimental effect on *Notoncus* ants due to altered soil chemistry and micro-climates. |
| **Pollutants and toxicants** | |
| Litter | • Litter and/or rubbish dumping, can degrade habitat. The dumping of rubbish, including garden clippings, has the potential to introduce weeds into butterfly habitat, particularly in urban areas. |
| 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 impact persistence.<br>• Pesticide and herbicide drift from gardens, industry and agricultural areas has the potential to impact the Eltham Copper Butterfly, the *Notoncus* ant species they depend upon, and the larval food plant. |
| **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. |

## 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.
- Increase the Eltham Copper Butterfly's range and/or extent, by providing opportunities for natural movement.
- Increase knowledge of biology, ecology, distribution, demography, emerging threats, and conservation requirements.
- Support community participation and improve awareness of the Eltham Copper Butterfly and conservation of dry open woodland environments.

## 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. |

| Action | Description |
|---|---|
| | • Undertake biodiversity values check prior to fuel management in areas of Eltham Copper Butterfly habitat, to confirm treatment suitability and timing. |
| Community engagement and awareness | • Continue to identify, promote, and support opportunities for community involvement in conservation efforts across all known sites.<br>• Continue to raise landholder and broader community awareness of the importance of protecting habitat and managing threats.<br>• Work with key stakeholders to reduce threats from human disturbance and encourage adherence to behaviours that support a healthy environment.<br>• Install signs to inform the community of the presence and importance of the Eltham Copper Butterfly, including providing information on appropriate and inappropriate types of plants to use in gardens around reserves.<br>• Increase landholder awareness of the Eltham Copper Butterfly and the impacts of livestock grazing. Provide guidance on the changes to grazing that may be required, such as exclusion, to support recovery.<br>• Expand the community supporter network and activities to include all areas where the Eltham Copper Butterfly occurs. Include private land managers where habitat occurs on, or adjacent to, their land. |
| Conservation management planning | • Review and update, or develop, relevant plans or planning tools to support conservation management.<br>• Apply best practise methods to determine areas of highest value for restoration and consideration of permanent protection mechanisms to improve habitat condition, resilience and connectivity.<br>• Consider preparation of conservation management plans for reserves that support Eltham Copper Butterfly. Priority should be given to the sites that are most vulnerable to threats, including Kiata Flora Reserve and Wail State Forest in northwest Victoria, and Wimmera populations. |
| Control introduced herbivores * | • Implement and maintain effective control of introduced herbivores in priority areas. |
| Control introduced invertebrates | • Implement and maintain effective control of introduced invertebrates in priority areas, including European Wasp populations.<br>• Employ a risk-based approach to limit the impacts of commercial apiaries on the larval food plant in Eltham Copper Butterfly habitat. |
| Control introduced plants * | • Implement and maintain effective control of introduced plants in priority areas and undertake revegetation with appropriate native species, where required. |
| Establish and maintain fencing | • Where required, establish and maintain fencing to prevent access and damage to populations or habitat from introduced species or over-abundant native species, including deer, rabbits and hares. |
| Improve habitat connectivity | • Restore habitat to improve connectivity between habitat patches and allow expansion of colonies.<br>• Undertake supplementary planting of Sweet Bursaria both within and between reserves where Eltham Copper Butterfly is present to create habitat links. |

| Action | Description |
|---|---|
| Manage built infrastructure | • Consider the Eltham Copper Butterfly's 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 problematic native plants | • Develop and apply management techniques to maintain appropriate abundance and diversity of native plants where required to support persistence of Eltham Copper Butterfly populations.<br>• Continue to consider and implement ecologically appropriate thinning of native vegetation in reserves that provide important habitat, including, but not limited to, those in the Eltham, Greensborough, and Montmorency areas. |
| Manage public access | • Manage public access to limit the risks of human disturbance.<br>• Maintain habitat quality at all urban sites by managing and mitigating impacts from rubbish and debris, run-off from roads, unplanned fires, illegal construction of bike jumps and construction of pathways. |
| Permanent protection * | • Investigate incentives, voluntary agreements, covenants, and other permanent protection measures to protect and restore habitat. |
| Protect key habitat | • Ensure that Eltham Copper Butterfly distribution data and ecological information are available and considered in planning for developments, land use changes and utilities maintenance. Ensure that incremental losses are included in consideration of potential losses.<br>• Identify opportunities to manage threats of land use change and development, including programs to encourage protection and management of remaining habitat areas. |
| Research | • Investigate and determine a suitable fire regime that meets the Eltham Copper Butterfly's ecological requirements and promotes its recovery.<br>• Improve understanding of the Eltham Copper Butterfly's reproductive requirements and factors influencing recruitment success. For example, develop a better understanding of the interactions between *Notoncus* sp. ants, and other invertebrate species, and plant species. Explore why Sweet Bursaria and *Notoncus* sp. occur in many areas where the Eltham Copper Butterfly is absent.<br>• Explore the feasibility and methods of translocating colonies of *Notoncus* sp. to improve Eltham Copper Butterfly habitat suitability, where required. |
| Restoration and/or revegetation * | • Undertake restoration and/or revegetation to increase Eltham Copper Butterfly habitat suitability and/or create new habitat areas.<br>• Encourage planting of the larval food plant Sweet Bursaria in areas of secure land tenure that are near populations of the butterfly, to expand available habitat.<br>• Where required, enhance habitat at known locations through a combination of weed control, ecologically appropriate vegetation thinning, and Sweet Bursaria coppicing, to ensure that an open vegetation canopy is maintained at all sites. |
| 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.<br>• Develop and implement a systematic and standardised program for annual monitoring of adult and larval abundance. |

| Action | Description |
|---|---|
| | • Monitor representative populations to determine trends and management needs, e.g., confirm whether *Notoncus* sp. are intolerant of increasing shading and benefit from shrub thinning programs and management of exotic grasses. |
| Translocation | • Investigate the need for, and if required, design and implement a translocation program to meet the objectives of the action statement.<br>• Translocations in the short-medium term should focus on delivering genetic management activities for small remnant populations.<br>• Genetic management translocations are likely to be needed for the four known Wimmera populations, Castlemaine Botanical Gardens and Walmer populations. |

**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 |
|---|---|
| Biomass management | • Biomass management (through mechanical removal) has been undertaken at sites within Nillumbik Shire to reduce bushfire hazard while also enhancing habitat structure and composition. |
| Community engagement and awareness | • Widespread information sharing and collaboration between local communities, supporting the Eltham Copper Butterfly, has occurred across the state.<br>• An Eltham Copper Butterfly webpage has been established to share information and resources between land managers and the community (available at https://butterflies.net.au/).<br>• Citizen scientists play a key role in the surveying and monitoring program. |
| Control introduced herbivores | • Monitoring for rabbits and hares in Eltham Copper Butterfly reserves is conducted routinely within the Shire of Nillumbik. Some of these sites have fencing in place to protect habitat from introduced herbivores. |
| Control introduced invertebrates | • Within the Shire of Nillumbik, a program to eradicate European Wasp nests occurring in or adjacent to Eltham Copper Butterfly reserves has been established. |
| Control introduced plants | • There has been some control of perennial grassy weeds and other priority weed species in known habitat within reserves and on private property. |
| Develop, update and apply forestry protections | • The species has a current species-specific prescription in the *Code of Practice for Timber Production 2014 (as amended in 2022)* (the Code):<br>– In the Portland-Horsham Forest Management Area:<br>> Apply a management area over populations.<br>> Protect the host plant *Bursaria spinosa* (Sweet Bursaria) within 250 m of any records of this species.<br>• The risk of forestry operations was considered for this species in 2020 under the Victorian Government Threatened Species and Communities Risk Assessment. Additional protections were not found to be required. |

| Past action | Description |
|---|---|
| Establish and maintain fencing | • Fencing has been established and maintained on a private property in Eltham with a breeding population of Eltham Copper Butterfly to prevent access and damage to the site from deer.<br>• Fencing has been established at a newly discovered population of butterflies at Tadema Park to deter illegal construction of bike jumps. |
| Manage problematic native species | • Ecological thinning, to counteract the threat of over-abundant native shrub species, is an ongoing and resource-intensive process that has proven key to maintaining Eltham Copper Butterfly populations and habitat. |
| Research | • A genetic study of three Eltham Copper Butterfly regions was completed to determine the distinctiveness of Eltham/Greensborough populations, relative to other Victorian locations and the Fiery Dull Copper Butterfly. |
| Restoration and/or revegetation | • Ecological thinning and coppicing of Sweet Bursaria has been carried out at Melbourne locations to maintain optimal density of this key habitat plant.<br>• Supplementary planting of Sweet Bursaria has occurred at numerous locations including in the Kiata area. |
| Survey and monitoring | • Searches for new populations using Sweet Bursaria density as a surrogate for Eltham Copper Butterfly habitat have been effective in finding 17 new populations in the last 13 years in northern Victoria; 8 of which were found in 2011 surveys and 9 were found in 2021-2023 surveys.<br>• Eltham Copper Butterfly monitoring of larvae and adults has occurred at a range of locations to assess distribution, population trends and habitat condition.<br>• Permanent Eltham Copper Butterfly monitoring methods were established at all Wimmera sites and Castlemaine Botanical Gardens in 2023. |

## 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

- Eltham Copper Butterfly Species Forecast Report
- Conservation Advice – Eltham Copper Butterfly (*Paralucia pyrodiscus lucida*)
- 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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