

An introduction to Saving our Species

Alison Cowie – Senior Threatened Species Officer



Acknowledgement of Country

Artist and designer Nikita Ridgeway from Aboriginal design agency – Boss Lady Creative Designs, created the People and Community symbol.





The 'Saving our Species' program



- Commenced in 2013 with the intention of securing threatened species and ecological communities in the future
- NSW's Biodiversity Conservation Program – required under the *Biodiversity Conservation Act 2016*
- Has delivered a 400% increase in the number of species managed on-ground
- Not a one-size-fits-all approach!
- Threatened entities have different needs based on:
 - their ecology, habitat and distribution
 - the threats to their survival
 - and how much we know about them.

SoS Management Streams

What we know about each threatened species allows us to allocate them to one of 9 management streams:

- site-managed species →
- landscape-managed species
- iconic species
- threatened ecological communities
- data-deficient species →
- threatened populations of a species
- key threatening processes
- partnership species
- keep watch species.



Strengths of SoS



Partnerships with other agencies

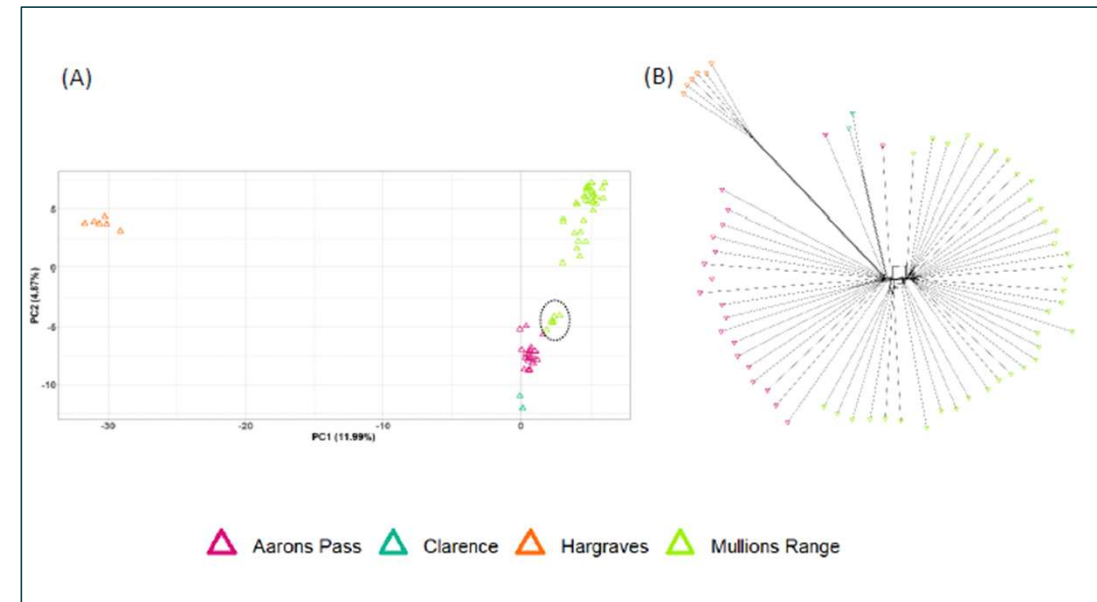
- National Parks and Wildlife Service (NPWS)
- Local Land Services
- Local Landcare associations

Dedicated Communications team

- Support with awareness-raising campaigns
- Support with creating accessible content

Opportunities for research

- Collaboration with university research groups
- Collaboration with Botanic Gardens of Sydney: SeedBank, Research Centre for Ecosystem Resilience



Phylogenetic tree showing genetic separation of *Acacia meiantha* sub-populations - ReCER

Bathurst Grassland Earless Dragon

Tympanocryptis mcartneyi

Alison Cowie – Senior Threatened Species Officer



Photo: Gavin Waters

What's a 'GED'?

Grassland

'goldilocks' species



Image: Matt Clancy

Earless

Genus *Tympanocryptis*
'hidden ear'



Image: George Madani

Dragon

Family Agamidae



Image: narodnatribuna.info

Taxonomy of grassland earless dragons



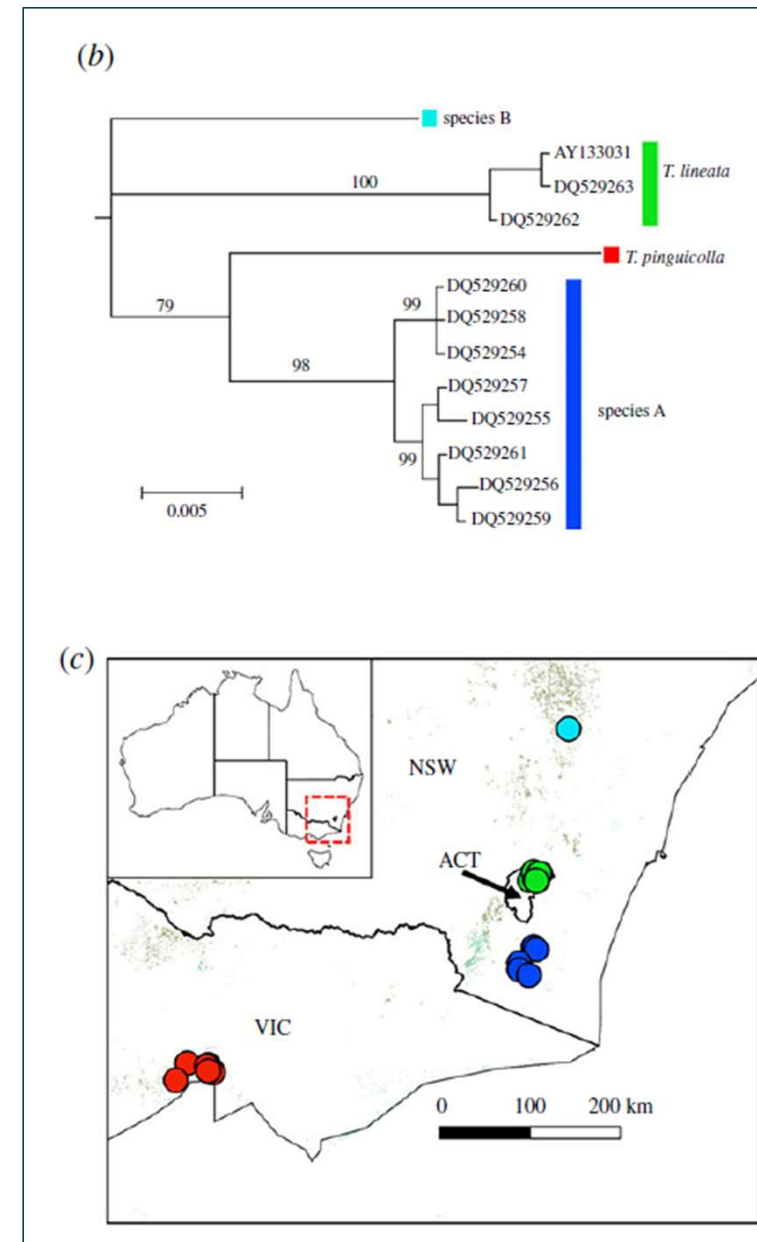
Illustration: Frederic McCoy 1885

From 'one' species
(*Tympanocryptis pinguicollis/lineata*)
to four:

- Bathurst GED (*T. mccartneyi*)
- Canberra GED (*T. lineata*)
- Monaro GED (*T. osbornei*)
- Victorian GED (*T. pinguicollis*)

Jane Melville et al. 2019

Taxonomy and conservation of grassland earless dragons: new species and an assessment of the first possible extinction of a reptile on mainland Australia



Habitat & behaviour

- Grassland habitat
- ‘Goldilock species’ – some grass cover but not too much
- Forage and bask in open patches
- Predate upon crickets, beetles, ants
- Embedded rocks and cracking clays provide shelter
- Also shelter within wolf spider burrows!



Image: Grassland Earless Dragon Alliance



Image: Matt Clancy



Image: Alex Pike

The Bathurst Grassland Earless Dragon story

- 1966: avid naturalists Uncle Ian McArtney and Gavin Waters sent two GEDs to the Australian Museum
- Early 1990s: Dr Will Osborne collected Canberra GEDs; visited Bathurst and collected one Bathurst GED with Gavin Waters
- Early 1990s: Gavin Waters found a dead lizard
- 2018: frozen specimen recovered!
- Dr Jane Melville was able to analyse DNA from the frozen specimen



Image: Will Osborne



Image: Kali McArtney

In recognition of his role in first collecting and sharing his knowledge of the species, the Bathurst GED was named after Uncle Ian McArtney:

Tympanocryptis mcartneyi

The 'lost' dragon

H	I	J	K	L
ScientificName	CommonName	NSWSta	CommS	DateLast
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1960
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1960
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	30/06/1966
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	30/06/1966
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	24/08/1966
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	31/12/1992
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1993
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1993
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1998
Tympanocryptis mccartneyi	Bathurst Grassland Earless Dragon	E4A,P,3	CE	1/01/1998

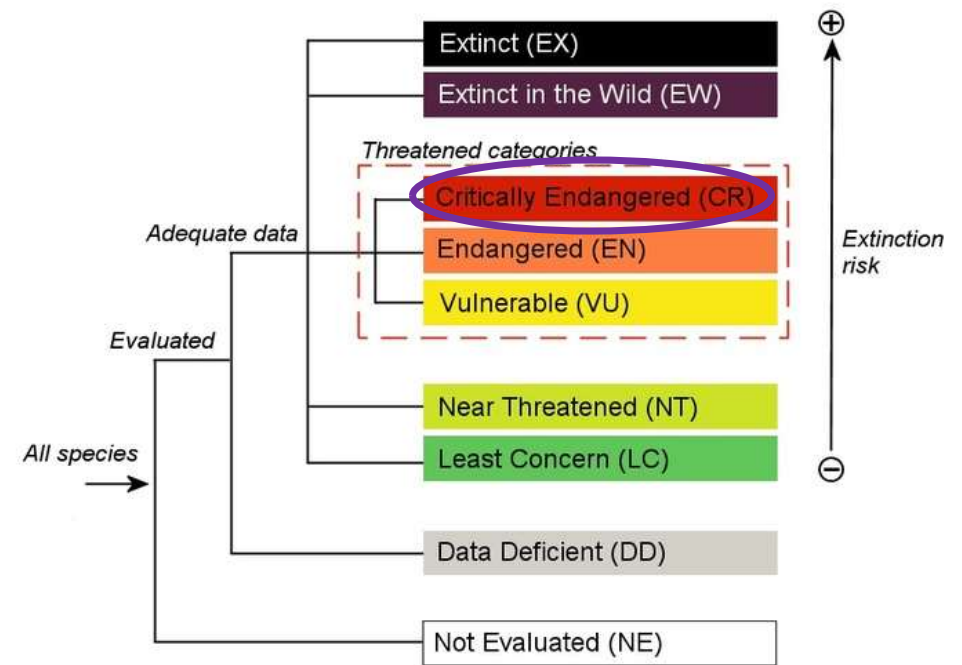
- Few reported sightings
- Nil sightings since the 1990s
- Low detectability, absence or low abundance, low awareness?

Conservation status

NSW Status: **Critically Endangered** –listed in 1996

Reasons for listing (the bad news):

- Highly restricted –very small Area of Occupancy
- Since European settlement, 99.5% of Natural Temperate Grassland has been destroyed or altered
- Habitat fragmentation
- Population size unknown
- Habitat degradation (rock removal, ploughing, pasture improvement)
- Weed incursion
- Feral animals
- Climate change



The good news



Reptiles ABC News Sun 25 Jun 2023

Tiny reptiles thought to be extinct discovered in Victoria

The Victorian Grassland Earless Dragon that was thought to be extinct in the wild has been discovered in the state.

- The Victorian Grassland Earless Dragon was re-discovered in 2023
- ...after no sightings since 1969!
- Ecologist Emi Arnold found the Vic. GED while assessing a site for development
- Demonstrates that absence of sightings does not always = true absence



Image: Emi Arnold 15

The BGED SoS project



- Data-deficient management stream – funding is a challenge
- Project focuses on:
 - Targeted surveys
 - Filling knowledge gaps and determine the best approach to on-ground management
 - Community engagement
- Dedicated field team:
The Grassland Earless Dragon Alliance



Image: George Madani

Targeted surveys

- Deployment and survey of artificial refugia grids
- Grids contain artificial spider burrows and roof tiles
- Active searches – rock rolling, endoscope inspections

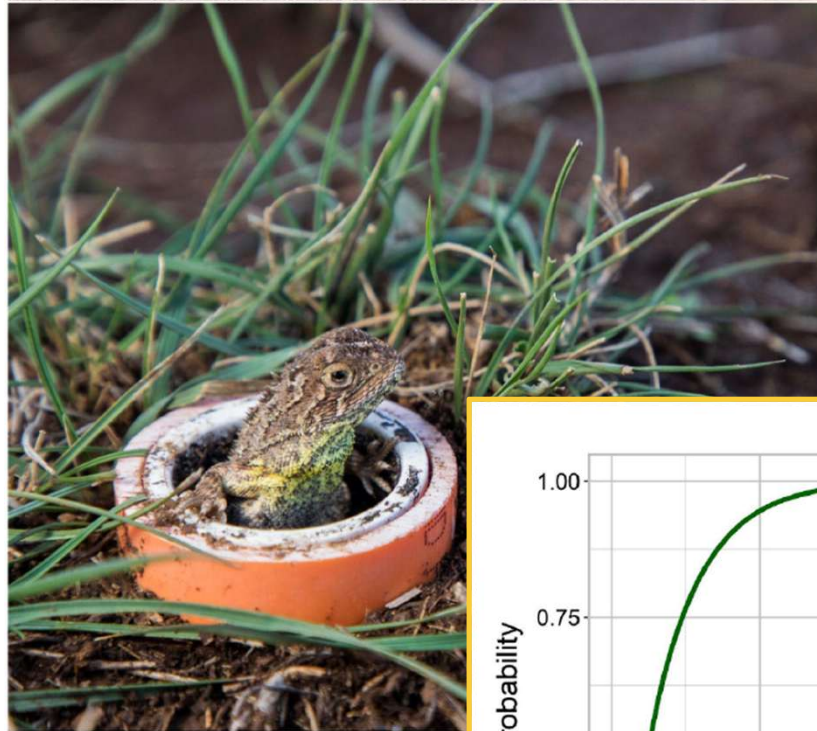


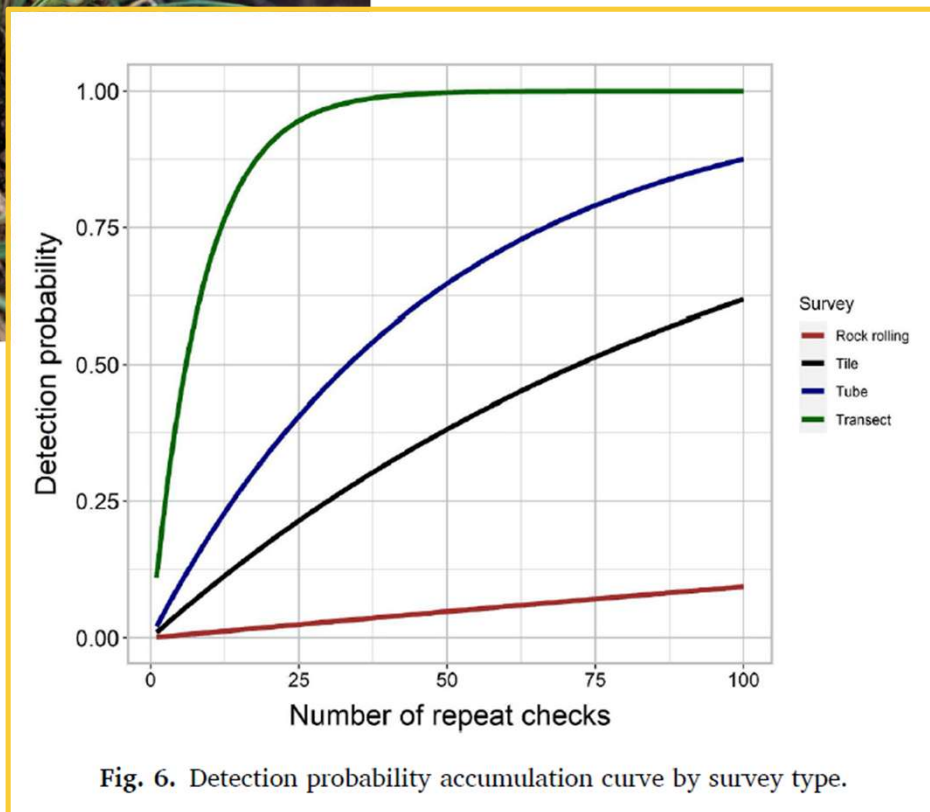
Image: George Madani

Further reading:

Where are my dragons? Replicating refugia to enhance the detection probability of an endangered cryptic reptile

George Madani, Rod Pietsch, Chad T. Beranek

Acta Oecologica 2023

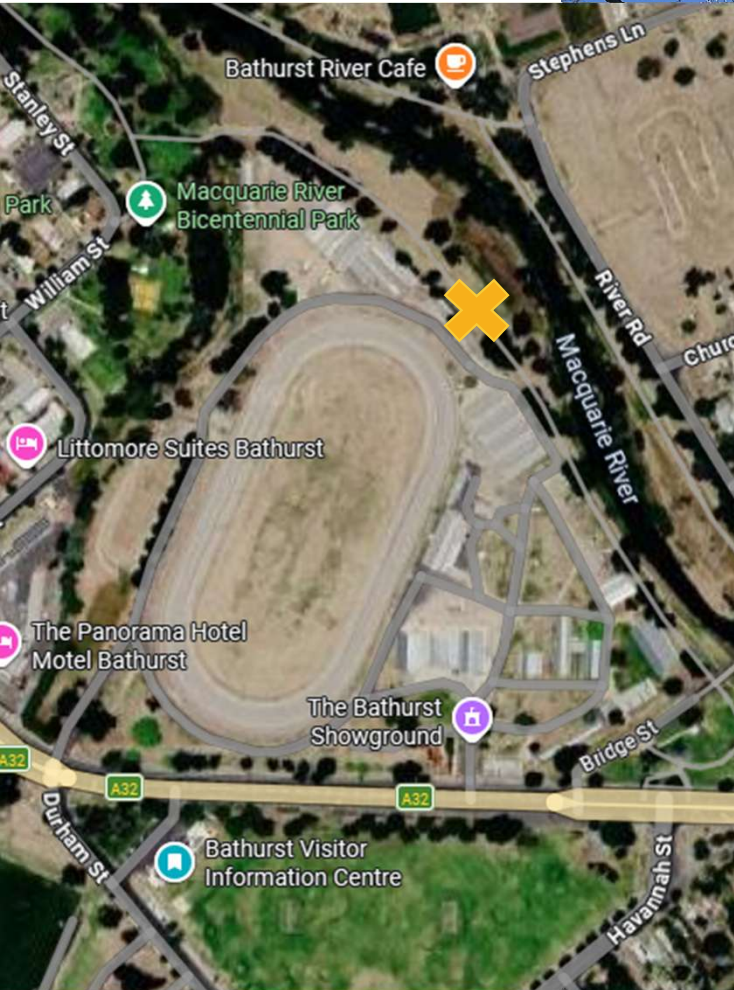


Community engagement

- Late 2024: partnership with Central Tablelands Local Land Services for a 'Grasslands Open Day'
- Early 2025: awareness raising campaign
 - Media release
 - Radio interviews
 - Social media posts (thanks Orange Field Naturalists!)
 - Expression of Interest form – 40+ landholders interested in hosting surveys
 - Resulted in potential sightings from members of the public
- 'Farming for Dragons' Brochure
- Late 2025: threatened species mural







How to help

- Promote sympathetic land use
 - Retain areas of native pasture
 - Identify areas of your farm that are 'dragon friendly'
 - Avoid rock removal, ploughing, pasture improvement
 - Feral animal control – Local Land Services offer support
 - Manage stocking rates
- Report potential sightings to savingourspecies@environment.nsw.gov.au
- Get in touch with me if you like the idea of making PVC spider burrows!

environment.nsw.gov.au/sos



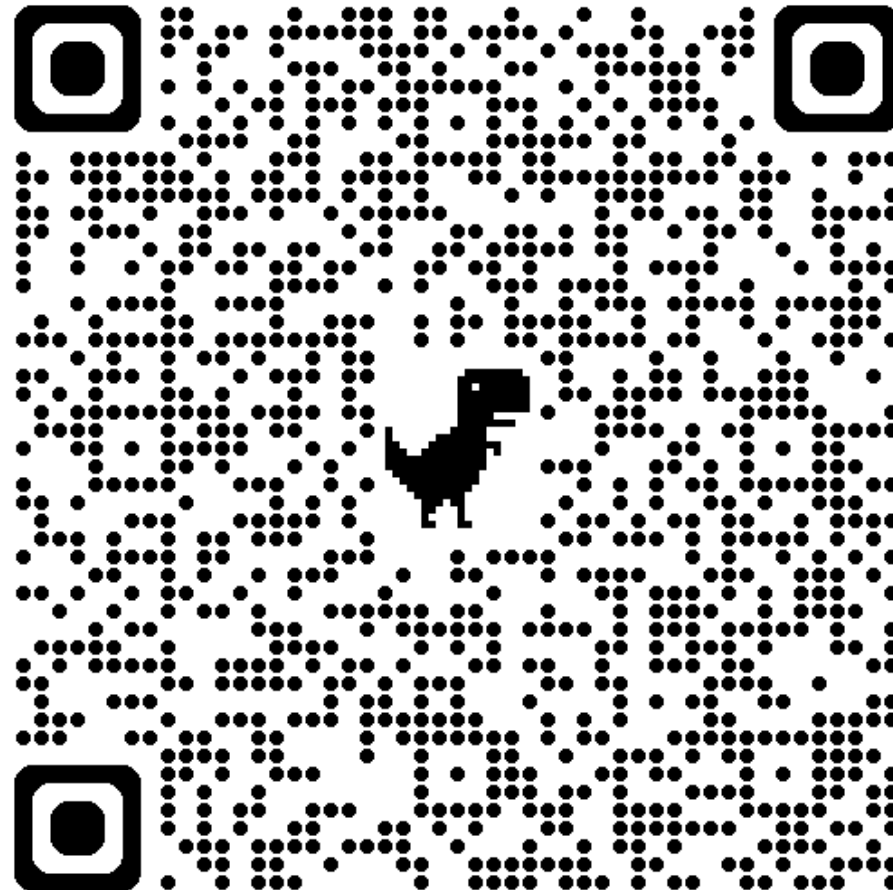
Farming for dragons

Productive landscapes can protect the Bathurst grassland earless dragon

Saving our Species
in partnership with
Grassland Earless Dragon Alliance
Central Tablelands Local Land Services



Download the 'Farming for dragons' brochure



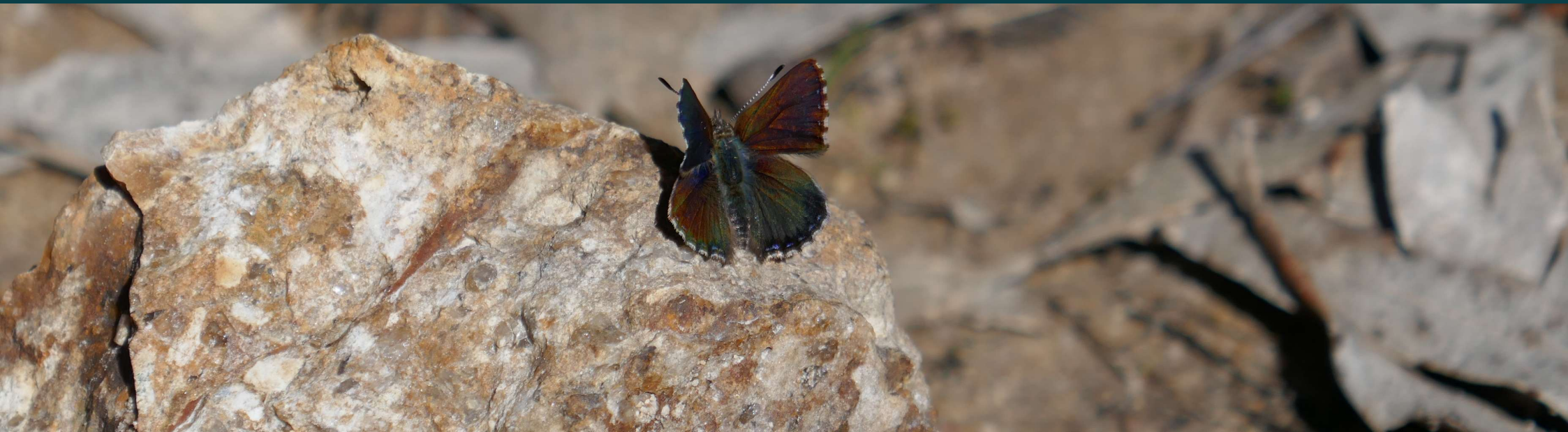
Saving our Species



Purple Copper Butterfly

Paralucia spinifera

Alison Cowie – Senior Threatened Species Officer



environment.nsw.gov.au/sos

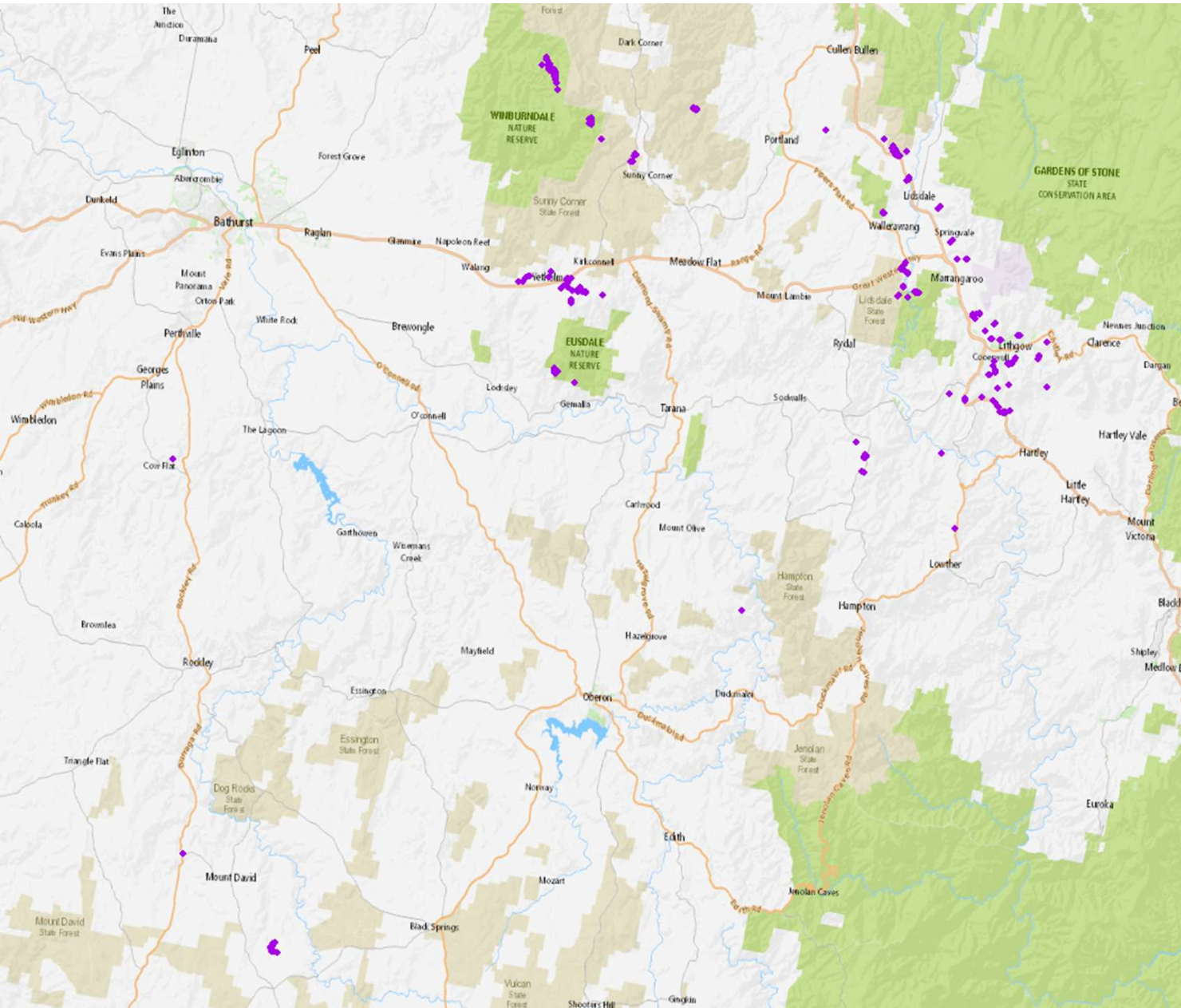
Taxonomy & naming

- A single female was taken from the Bathurst region in 1964
- Re-discovered in 1977: males, females, eggs taken for identification
- Described as a new species, '*Paralucia spinifera*' in Austral Entomology in 1978 (Edwards & Common)
- Originally known as the Bathurst Copper, and known locally as the Copperwing Butterfly

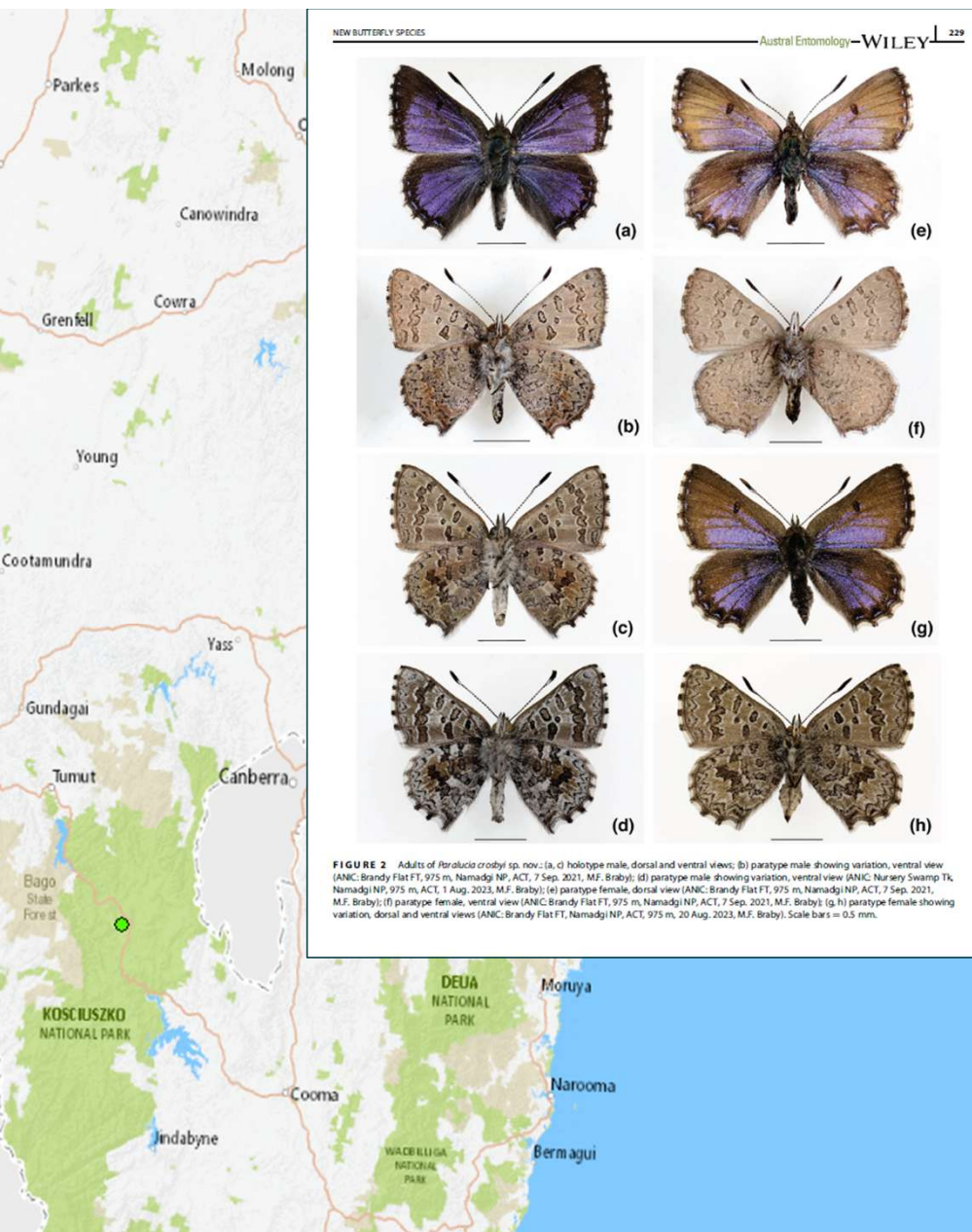


Appearance & behaviour





- Wiradjuri Country – NSW Central Tablelands
- Restricted to elevations of 850m ASL and above
- Known populations occur on private land, Crown land, National Parks estate
- Disjunct/isolated population near Mt David



Violet herring



- New population of *Paralucia* discovered in Namadgi National Park by Susan Wishart
- Provisionally identified as *Paralucia spinifera* – a huge range expansion
- Over 200km from known *Paralucia spinifera* populations
- Same host plant, same attendant ant
- Described as a new species by Michael Braby in 2023: *Paralucia crosbyi* - the Violet Copper Butterfly
- Combination of molecular (genetic) data and morphological data

Habitat requirements

- Presence of native blackthorn: *Bursaria spinosa* subsp. *lasiophylla*
- Presence of attendant ant: *Anonychomyrma itinerans*
- Heavy frosts and/or occasional snow
- 3–4 hours exposure to sunlight
- Open eucalypt woodland – edges preferred
- Burning!



Image: AntWiki



Life cycle

- Butterflies emerge following pupation from mid-August
- Flying season peaks in September/October
- Butterflies mate, females lay eggs on host plant

- Attendant ants are already patrolling the host plants...
- Larvae emerge from eggs and are immediately tended to by ants
- Larvae stay on plants full-time until third instar
- Larvae then become nocturnal, descending into ant nests by day

- Pupation occurs within the ant nests at the base of the host plant

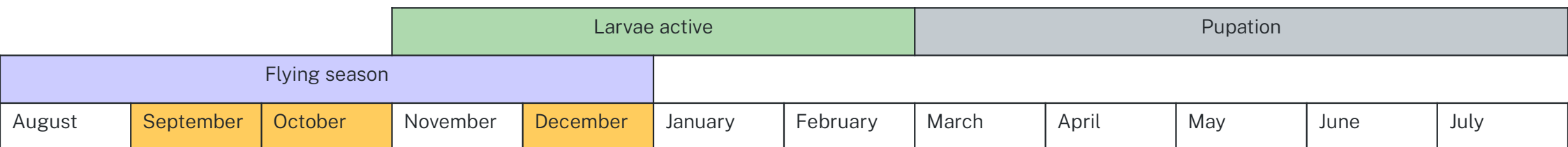




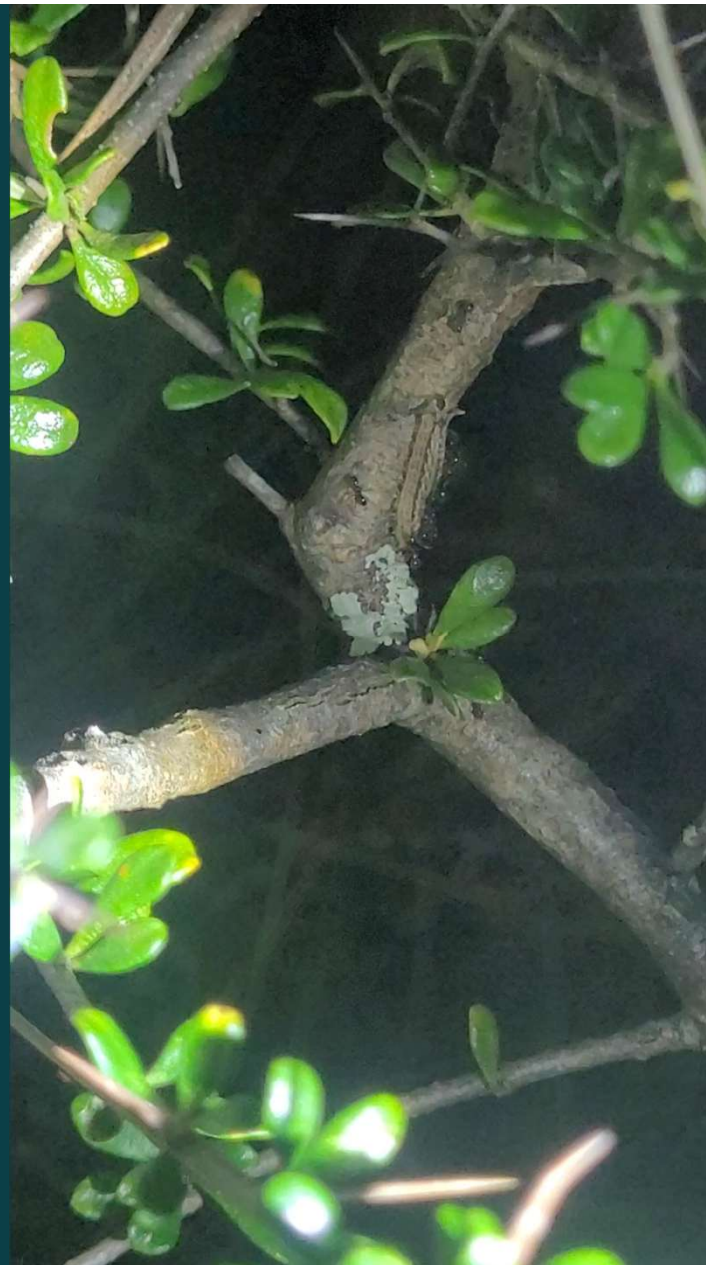
Image: R. Mjadwesch



Image: Walker



Image: R. Mjadwesch

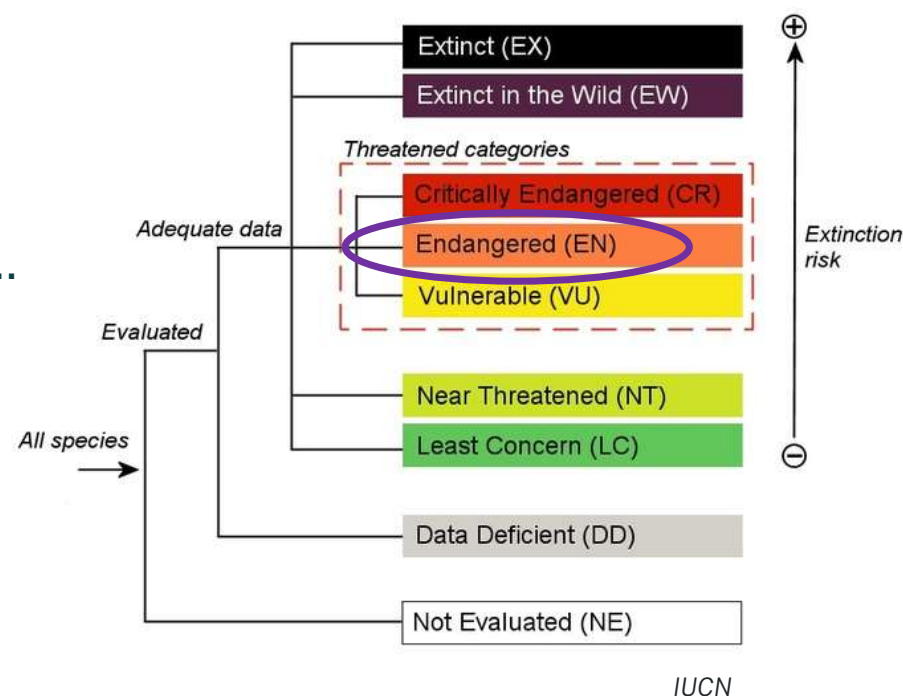


Conservation status & threats

NSW Status: **Endangered** – listed in 1996

Reasons for listing:

- Highly restricted geographic range
- Species undergoes population fluctuations
- Estimated or inferred continuing decline due to...
 - Area, extent, quality of habitat
 - Vegetation clearing & modification
 - Low frequency fire
 - Weed invasion
 - Feral animals
 - Adverse land management practices



What do these threats mean for the butterfly?

(Reduced) Area, extent, quality of habitat	• Populations become fragmented • Colonisation or re-colonisation of habitat becomes harder • Reduced genetic mixing
Vegetation clearing & modification	• Habitat is directly impacted through removal or modification
Low frequency fire	• Overstorey grows = increased shading • Bursaria becomes senescent = larval food availability reduces



What do these threats mean for the butterfly?

Weed invasion	• Weeds shade out habitat areas • Impede butterfly movement through habitat
Feral animals	• Pigs damage ant nests, uproot Bursaria
Adverse land management practices	• Pesticide use (e.g. for Pine Bark Beetle) kills off-target species



Threat management by Saving our Species



What	Where	How
Weed control	- Public land and private tenure - National Parks estate	- Lithgow & Oberon Landcare Association – trained bush regeneration staff - NPWS staff and contractors
Feral animal control	National Parks estate	NPWS staff and contractors
Community engagement	- Grants Block Travelling Stock Reserve - Central Tablelands region	- Annual field day - Media stories, school visits, campaigns
Burning	- Advice to anyone in the region ...Grants Block TSR?	- Pathways through paperwork - Partnership with Local Land Services

Monitoring – essential!



Threat monitoring

- Tells us whether threat management is working, and how well
- Helps us prioritise sites for next year
- Provides a basis for understanding how the butterfly responds

Population monitoring

- Enables us to understand trajectories, and react accordingly
- Improves our understanding of fluctuations
- Enables us to understand how different environmental factors effect the butterfly

Overview of monitoring methods

Adult monitoring

Area searches

Quicker – snapshot of butterfly presence and numbers, snapshot of weed load and pig disturbance

Quadrat-based

More time-consuming – in-depth look at vegetation characteristics in addition to weed load, pig disturbance

Larvae monitoring

Quadrat-based

In-depth look at host plant characteristics, use of host plant by larvae



Image: Dumie Dissanayake

What can I do as a friend of the Purple Copper Butterfly



Home > Topics > Animals and plants > Search for threatened species > Find by region

Purple Copper Butterfly, Bathurst Copper Butterfly - profile

Scientific name: *Paralucia spinifera*

Conservation status in NSW:

Endangered

Commonwealth status:

Vulnerable

Gazetted date: 15 Nov 1996

Profile last updated: 01 Aug 2024

Description

A small butterfly with a wingspan of approximately 20 mm. The upper sides of the butterfly's wings are copper-coloured and display a purple, blue, and green iridescence when sunning. The undersides of the wings are patterned with subtle brown, black and grey. The black antennae are dotted with white spots and terminate with a black tip. It is distinguished from *P. aurifera* and *P. pyrodiscus* by the size, shape and colour of the wings, and also by a spine that extends over a joint in the forelegs.

Indicative distribution



The areas shown in pink and purple are the sub-regions where the species or community is known or predicted to occur. They may not occur throughout the sub-region but may be restricted to certain areas. ([click here](#) to see geographic restrictions). The information presented in this map is only indicative and may contain errors and omissions.

Images



Purple Copper Butterfly Image 1 of 3.

[View slideshow.](#)

Related information

■ [Bathurst copper butterfly - recovery plan \(PDF - 614KB\)](#)

■ [Bathurst copper butterfly - Scientific Committee determination](#)

■ [Brochure: Help the endangered purple copper butterfly](#)

■ [Environmental Impact Assessment Guidelines - Bathurst \(Purple\) Copper Butterfly \(PDF - 41KB\)](#)

■ [Factsheet - Counting coppers: join the search for the purple copper butterfly \[INCLUDES IDENTIFICATION GUIDE FOR SIMILAR BUTTERFLY SPECIES\]](#)

■ [Purple Copper Butterfly General Fact Sheet](#)

- Promote sympathetic land use practice
 - Avoidance of clearing
 - Stay on top of weeds
 - Avoidance of pesticides – understand the life cycle
- Read more on the Purple Copper Butterfly threatened species profile
- Expand the butterfly's friendship group!

Tips to help with your search

- The 'flying season' for purple copper butterflies spans from late August to early November. Butterfly activity peaks in September and October at most sites.
- Butterflies are best spotted on sunny, calm days between 10 am and 2 pm.
- They are most active when the temperature is above 15°C and cloud cover and wind are low or absent.
- When butterflies are disturbed, they'll briefly take flight, so take your time walking through the habitat and watch for movement.
- After taking flight, butterflies will often land in the sun to bask. Avoid casting a shadow on the butterfly – now is your chance to get up close and take some photos.
- They only live at elevations above 850 m, where their food plant, native blackthorn (*Bursaria spinosa* subspecies *lasiophylla*), is found.
- Native blackthorn is the only food plant that purple copper butterfly caterpillars eat, but adult butterflies can be found feeding on other flowering plants.

Observations to take note of

- Where they are sighted: take a GPS location if possible – you can do this by saving a location in your phone's map application.
- The time and date of your sighting.
- What habitat they are using: take note of the vegetation in the area if you are able to identify any plants or trees.
- How many individuals are sighted.
- Photos are extremely useful for confirming identifications; take photos of the upper wing and underwing of butterflies where possible.

How to report a sighting

- Record your sighting through **NatureMapr**. You'll need to register for an account through your smartphone, tablet or web browser.
- You can also report sightings by email: savingourspecies@environment.nsw.gov.au. Remember to include photos (top-of-wing and underwing photos where possible), the sighting location and the number of butterflies sighted.

Participating in the search and reporting sightings will provide the Saving our Species team with valuable data that will aid in the protection of this endangered butterfly.

Purple copper butterfly and similar butterfly species

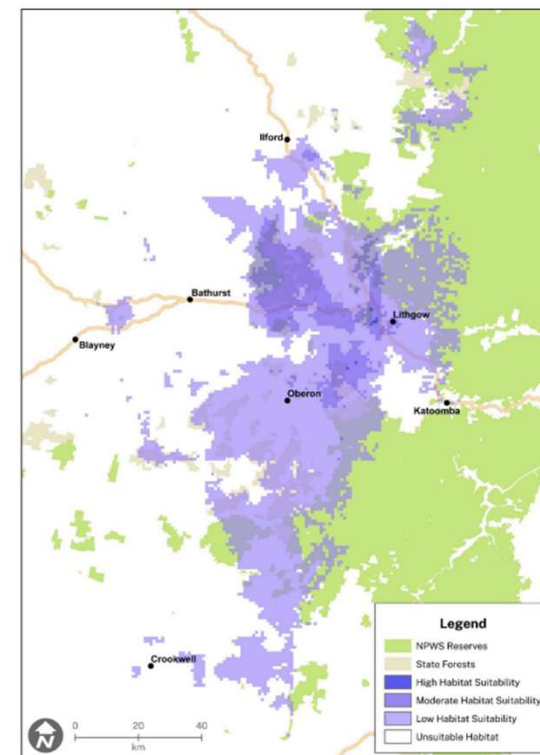
Varied dusky blue (*Erina hyacinthina*)



Purple copper butterfly (*Paralucia spinifera*)



Fringed heath-blue (*Neolucia agricola*)



Predicted habitat suitability for the purple copper butterfly based on a maxent species distribution model

Cover image: Purple copper butterfly (David Roma/DCCEEW); All other images: Martin Purvis

Environment and Heritage, Department of Climate Change, Energy, the Environment and Water, Locked Bag 5022, Parramatta NSW 2124; Email: info@environment.nsw.gov.au; Website: environment.nsw.gov.au. ISBN 978-1-76186-092-8; EH 2025/0320; August 2025.

