



Beautiful Australians aflutter

Australian fritillary tops list of butterflies at risk of extinction

By Jaana Dielenberg

NEW RESEARCH published in *Austral Entomology* has identified the top 26 Australian butterfly species and subspecies at greatest risk of extinction within the next 20 years.

Each state and the Northern Territory has butterflies on the list. Only six of the butterflies

identified are currently listed for protection under Australian law (EPBC Act).

The study was co-ordinated by the Threatened Species Recovery Hub of the Australian Government's National Environmental Science Program and the research team included 28 scientists and butterfly experts from ➔

^ Dr Michael Braby surveying butterflies on the Gove Peninsula in the Northern Territory. Photo: Ian Morris.



^ The larvae of Tasmania's *Oreixenica ptunarra* feed on native poa grasses. Threats to the species include clearing for agriculture, changed fire patterns and predation by the European wasp. Photo: Jo Potter-Craven.

^ **Opposite page**

Top: Once widespread at coastal wetlands along the Australian east coast, the Australian fritillary *Argynnis hyperbius inconstans* may already be extinct. If you see one contact info@environment.nsw.gov.au. Photo: Garry Sankowsky.

Centre: The 26 Australian butterfly species and sub-species at greatest risk of extinction. Note: * indicates a sub-species # indicates a population. Graphic: Jaana Dielenberg.

Bottom: Many landowners do not realise that they are important custodians of rare and threatened butterflies like the bulloak jewel on Queensland's Darling Downs. Photo: Michael Braby.

^ A small bronze azure larva with an attendant ant. The ants shelter the caterpillars in their underground ant nest by day and bring the caterpillars above ground to feed on sourbush at night. Photo: David Lohmann.

universities, museums, government agencies and environment groups. It also received valuable assistance from amateur entomologists.

Lead author Hayley Geyle from Charles Darwin University said most of the species identified at risk have little or no management occurring to conserve them.

“By raising awareness of these butterflies and the risks they face, we aim to give governments, conservation groups and the community time to act to prevent their extinctions,” Ms Geyle said.

“The good news is that for the majority of these species there is still a very good chance of recovery if there is new targeted conservation effort, and the actions required are achievable, like protecting habitat from clearing and weeds and better fire management.”

Landowners part of the solution

Senior researcher Dr Michael Braby from The Australian National University, who has been collecting and studying Australian butterflies for over 40 years, said support from private landowners was vital for many species. Most of the species identified as in trouble occur across a



mix of land types, including conservation, public and private land.

“In most cases conservation reserves alone are not enough to ensure the long-term survival of species,” Dr Braby said.

In Queensland's Darling Downs region, the bulloak jewel (*Hypochrypsops piceatus*) and sapphire azure (*Heliophorus moorei*) depend on old-growth and mixed bulloak woodland, with extensive colonies of a specific ant (*Anonychomyrma*). This unique woodland type was probably once widespread but has been extensively cleared, making remaining patches incredibly important to the survival of the species.

“Many landowners do not realise that they are important custodians of such rare and threatened butterflies, and how important it is not to clear remaining patches of remnant vegetation on their properties and adjoining road reserves,” Dr Braby said.

In New South Wales the story is very similar for the pale imperial hairstreak which occurs in old-growth brigalow woodland, which has been extensively cleared since the 1950s.

Local landowners and Landcare groups have already been playing a valuable role in recovery actions for several species, such as planting the right food plants for the Australian fritillary around Port Macquarie, and for the Bathurst copper.

In addition to being beautiful and fascinating, butterflies play an important role in nutrient recycling, pollination and as food for other animals according to Dr Braby, “It is vital that we value and conserve Australia's invertebrate biodiversity – our ecosystems and ultimately our survival may depend on it.”

Special relationships with ants

Study co-author Dr Richard Glatz, an entomologist from The University of Adelaide and the South Australian Museum has been monitoring Kangaroo Island's two imperilled butterflies, the eastern and small bronze azures.

Many caterpillars of the small bronze azure are tended by one species of sugar ant (*Camponotus terebrans*) and the ants are rewarded by a sugary secretion produced by the caterpillars. By day caterpillars are sheltered underground in the ant nest, then at night they are escorted up by the ants to feed on the leaves of common sourbush.

“Half of Kangaroo Island, including much of the conservation areas, burnt in the devastating January 2020 fires,” Dr Glatz said. “We have not found any small bronze azures in areas where the sourbush has burnt, but we have found it in small patches of unburnt vegetation. So for now it is hanging in there.”

The most imperilled of the Kangaroo Island species, the eastern bronze azure (*Ogyris halmaturia*), was believed to be extinct on the

island for 80 years until it was rediscovered in 2014 at the western end of the island. The lifecycle of the eastern bronze azure is quite bizarre but looks to have protected it from the fires.

Adult eastern bronze azures only appear for a few weeks in November to feed and flutter before they lay their eggs near the entrances of sugar ant nests. The ants carry the caterpillar larvae underground, where they stay, feed and grow for 11 months.

“We don’t yet know what the caterpillars eat in the ant nests,” Dr Glatz said. “Possibly the caterpillars are eating ants or ant larvae. So why the ants carry them down and look after them is a mystery.

“It might be for sugary secretions like with the small bronze azure, but the caterpillars could also be using chemical trickery, mimicking the scent of ant larvae to fool the ants,” Dr Glatz said.

According to Dr Glatz, a fire in November would be devastating, wiping out adults at a time when few caterpillars are underground, but because the Black Summer fires occurred in January the entire butterfly population was protected underground. Post fire surveys in November have since recorded adult butterflies in areas that burnt.

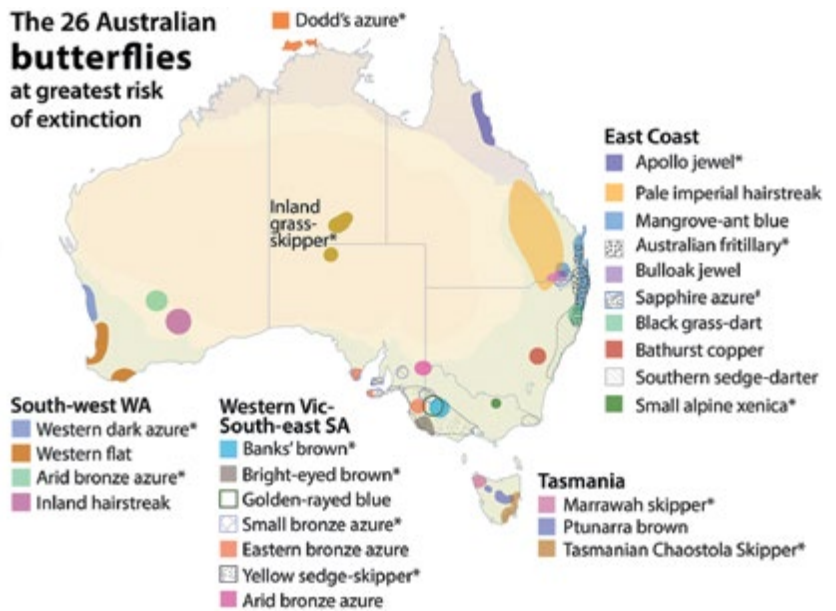
Australian fritillary the most at risk

Australia’s most imperilled butterfly is the Australian fritillary (*Argynnis hyperbius inconstans*) from the east coast. There have been no specimens or photographs taken of the Australian fritillary for about two decades, although a single individual was observed flying near Port Macquarie in 2015.

It is possible it is already extinct, but as it was once quite widespread at swampy areas along 700km of coastal Queensland and New South Wales, conservation managers hope there are still some out there.

The main driver of fritillary declines has been habitat loss as swamps have been drained for farming and urbanisation. At remaining swamps weeds also smother the arrowhead violets that the butterfly lays its eggs on.

A lack of ecological knowledge about the needs of the species is also a major problem for management. ■



Taking action

Anyone who thinks they have seen a fritillary should record the location, try to photograph it and the site and immediately contact the NSW Department of Planning, Industry and Environment at info@environment.nsw.gov.au

Members of the community anywhere in Australia can also use the free Butterflies Australia app to look up great photos and information about the species near them or be citizen scientists by recording sightings. ■