

Utilizing ecological fire management to enhance purple copper butterfly habitat

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Abstract

The purple copper butterfly (*Paralucia spinifera*) is a vulnerable species found exclusively in New South Wales' Central Tablelands. All known populations are situated above 900 metres, primarily on north-facing hills with periodic snowfall. The butterfly is supposed to rely on a mutualistic relationship with a native ant, and it only feeds on one type of native shrub: the native blackthorn (*Bursaria spinosa* ssp. *lasiophylla*) (*Anonychomyrma itinerans*). Despite this, habitat loss, plant competition, and a lack of natural blackthorn regrowth pose a threat to purple copper butterfly populations. Ecological fire trials have been used to rejuvenate native blackthorn plants over the last three years. Implementing carefully managed trials on purple copper butterfly habitat is providing a new approach to managing the complex issues surrounding this species. Fire is emerging as an important tool for threatened species across Australia, and implementing carefully managed trials on purple copper butterfly habitat is providing a new approach to managing the complex issues surrounding this species. This study has shown promise, with considerable basal shoot growth and lichen reduction observed across experimental sites. As a result of these outcomes, more food sources for larvae are available, and habitat regions may be improved. While this is a favourable conclusion that gives management alternatives, more research is required. Studies on the link between the butterfly and the native ant, as well as more ecological fire trials and continuing larvae monitoring counts, will add to our understanding of the relationship and its function in population dynamics.

The Bathurst Copper Butterfly, *Paralucia spinifera*, can only be found on the Central Tablelands of New South Wales, between Bathurst and Hartley. The Bathurst Copper Butterfly is only found at heights over 900 metres, where it feeds on *Bursaria spinosa* subsp. *lasiophylla*, a kind of Blackthorn. The Bathurst Copper Butterfly has a mutualistic relationship with *Anonychomyrma itinerans*, a little black ant that guards the caterpillar and hosts the pupae within its nest. The Bathurst Copper Butterfly has been found in twenty-nine different locations across fewer than thirty hectares of habitat. Native vegetation removal is estimated to have decreased the area of viable habitat to small isolated remnants. The effect that numerous threats to the species may have on the remaining sites is compounded by the limited size of these remnants. Habitat loss or change due to clearing, spraying, grazing, fire, weed invasion, and illicit collection are all current threats to the Bathurst Copper Butterfly. Six of the twenty-nine sites have not seen the butterfly in recent years, while others may be declining.

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