Department of Sustainability and Environment

Action Statement

Flora and Fauna Guarantee Act 1988 No. 150

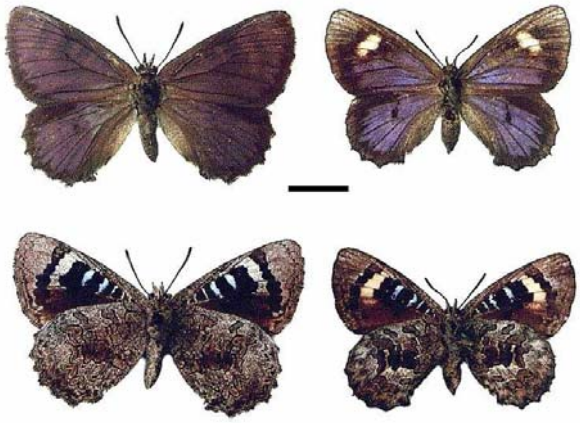
Large Brown Azure Butterfly

Ogyris idmo halmaturia

Description and distribution

The Large Brown Azure Butterfly *Ogyris idmo halmaturia* Tepper 1890 is the second largest Lycaenid butterfly that has been recorded in Victoria. The average wing expanse is 4.7cm for males and 4.9cm for females. Sexual dimorphism is exhibited to a noticeable degree by *O. i. halmaturia*. With males the upperside of the fore and hindwings are dark brownish-purple with a slight metallic sheen and have comparatively narrow brownish-black borders or margins. In females the basal to central areas on the upperside of the fore and hind- wings are metallic purple, tinged bluish. These metallic areas are surrounded on the outer edges of the wings by broad brownish-black margins which extend to cover the apical half of the forewings. The females also have a small, oval, creamy-white subapical patch on the forewing uppersides that is lacking in the males. The forewing undersides of both sexes have the apex and termen (outer edge) widely light grey, with the central to basal areas brownish-black. These brownish-black areas are crossed by a succession of narrow whitish-blue metallic bars which extend from the costa (leading edge of the wing), to the rear of the discal cell, or in some instances a little beyond it towards the inner margin (rear edge of the wing). In females the creamy-white subapical forewing patch is also present on the underside of the forewings. The hindwing undersides of both sexes are cryptically coloured in shades of brown, grey and brownish-black in a series of irregular wavy lines and bands.

The Large Brown Azure Butterfly has been recorded in the past from western Victoria and southern South Australia including Kangaroo Island. Within Victoria this species was formerly recorded at the following localities:



Large Brown Azure Butterfly *Ogyris idmo halmaturia* [Viridans Biological Databases – Victoria)

Distribution in Victoria
[source: Atlas of Victorian Wildlife, DSE 2004]

Victoria
The Place To Be

- 5km SSW of Kiata (near the northern boundary of the Little Desert National Park) in 1939 (Hateley *pers. comm.*)
- Dimboola (Common & Waterhouse 1981).
- The Grampians National Park (Common & Waterhouse 1981).
- Portland (Common & Waterhouse 1981).

Precise site details are not known for the Dimboola, Grampians and Portland records (Field, pers. comm.). In South Australia, the species formerly occurred at Blackwood, Victor Harbour, Brimbago, near Ceduna (Fisher 1978) and at the Rocky River on Kangaroo Island (Dunn & Dunn 1991). A population was discovered in South Australia east of Adelaide in 1995 (Hunt *et al.* 1998). Field (pers. comm.) notes that if any other populations remain extant in South Australia, they are most likely to occur on Kangaroo Island.

While Common and Waterhouse (1981) mention that there are specimens of *O. i. halmaturia* from Mildura in north-western Victoria and one from Broken Hill in western New South Wales, it is now considered likely that these are specimens of the separate species *Ogyris subterrestis subterrestis* Mildura Ogyris (formerly *Ogyris* sp. aff. *idmo.).*

The nominotypical subspecies, *Ogyris idmo idmo* Hewitson 1862, is rare, local in occurrence and appears to have a limited distribution in the south-west of Western Australia (Common & Waterhouse 1981). Field (1992) mentions that one population of *O. idmo* which occurs at Mt. Ragged in the Cape Arid National Park has females which resemble *O. idmo halmaturia* rather than the nominotypical subspecies as would be expected in Western Australia. The population at Mt Ragged may be another undescribed species of *Ogyris*, and further work is needed to clarify this (Field *pers. comm.*).

Habitat

Field (*pers. comm.*) has observed *Ogyris idmo* to occur in some heavily forested areas in Western Australia. In Victoria, the Large Brown Azure Butterfly seems to require relatively open habitats within heathland and mallee-heath communities on light or sandy soils. These areas must also contain abundant nests of the *Camponotus* ants. *Camponotus terebrans* nests are always found in sandy areas, particularly at the base of mallee eucalypts. Colonies can be formed with between 10 and 15 entrances around a tree trunk, providing an obvious visual presence.

Life history and ecology

Common and Waterhouse (1981), and several other authors state that the adults of *O. idmo idmo*, usually fly within one metre of the ground and frequently settle with closed wings on sticks, stones or other debris where the cryptic colouration and markings on the underside of their wings makes them difficult to see. They have also been observed while feeding at the flowers of low growing plants such as *Pimelia* sp. (rice flower), (Burns and Rotherham 1969). The few observations *of O. idmo halmaturia* seem to indicate that the adults of this taxon behave in a similar fashion (Hateley *pers. comm.*, Douglas *pers. obs.*). Field (*pers. comm.*) notes that *Ogyris otanes, O. idmo* and *O. subterrestis* all appear to be low flying, while the remainder of the group is characteristically high flying.

It would appear that the adults of both the *O. idmo* subspecies remain fairly close to their chosen breeding sites, although Common & Waterhouse (1981) mention that male *O. idmo idmo* have been observed to exhibit hill-topping behaviour on nearby sand dunes. It therefore seems possible that males of *O. i. halmaturia* may also hill-top if a given breeding colony is situated near a suitable sand dune, rock outcrop or hill. Field (*pers. comm.*) has observed them on ridges on sand hills, but notes that they can also be found in flat country.

Historical records would seem to indicate that the butterfly has a comparatively brief adult flight period which extends from late October to mid December. There is also a possibility that it may have a staggered emergence progressing from north to south.

Observations of *O. idmo* in Western Australia have indicated that eggs are laid singly into the jaws of ants (Field, pers. comm.). No eggs have yet been found in Victoria. It is almost certain that there is only one generation of the Large Brown Azure Butterfly per year with the adults on the wing from late October (Hateley *pers. comm.*) to mid December (F. Douglas, *pers. obs.*). Hateley collected six specimens between late October and mid November. All of these specimens were collected at a breeding colony which was formerly situated on the northern boundary of the Little Desert National Park at 5km SSW of Kiata, Victoria.

Ant Association

The Large Brown Azure Butterfly has an obligate relationship with a species of *Camponotus* (sugar) ant that is listed in several works as *C. nigriceps*. However, a specimen of this ant from the Kiata locality has subsequently been re-identified as *C. terebrans* (Field *pers. comm.*). Although it was initially thought that *Eucalyptus viridis* (possibly the subspecies *wimmerensis*), could be the larval host plant of the Large Brown Azure Butterfly it now seems likely that the larvae of this subspecies are solely ant-attended and are either fed by the adult ants or most probably are predacious on ant larvae. This conclusion was reached as a result of field work that has been carried out on the biology

of the nominotypical subspecies in Western Australia, which would appear to indicate that the larvae complete their development underground within *Camponotus* ant nests (Field *pers. comm.*). The wings of the butterflies often appear greasy, which is a further indication that the larvae feed on ant larvae. Several other Lycaenid butterflies which appear greasy are known to be predacious (Field *pers. comm.*).

The exact interaction between the ant and butterfly is unknown. In most ant and Lycaenid butterfly relationships, the butterfly larvae exude a carbohydrate and protein rich excretion from a gland which the ants feed on. It is possible that the butterfly fools the ants which may receive nothing or very little. It is also possible that some chemical is exuded which stops aggressive behaviour in the ants (Field *pers. comm.*).

There is a high correlation between the distribution of *Camponotus terebrans* and *Ogyris idmo, O. subterrestis* and *O. otanes* (Field *pers. comm.*). McArthur *et al.* (1997) note there is a southern and a northern form of *Camponotus terebrans. Ogyris idmo* is apparently found in association with the southern form (Field *pers. comm.*). While it is not known if *Camponotus terebrans* is the only ant species associated with *O. idmo halmaturia*, the only pupae found in Victoria (in 1945) was from this species' nest (Field *pers. comm.*). *Camponotus terebrans* is a widespread, common, species, which can be locally abundant (Field *pers. comm.*).

Disturbance

Field (*pers. comm.*) has observed that in Western Australia a number of populations of *O. idmo* occur in quite disturbed habitats. The population which once occurred near Kiata was located within an area harvested for a *Eucalyptus* oil distillery. However, complete land clearing is likely to be detrimental since it would remove the mallee vegetation that is a source of food for the associated ant species.

While fires which occur at an inappropriate time of the year (ie. when adults are flying) could clearly represent a threat, fires at other times (ie. when larvae are underground) may not be detrimental. An appropriate fire regime may in fact benefit the butterfly. *Camponotus terebrans* can quickly recolonise burnt areas and become dominant (Field *pers. comm.*). The site at Mt Ragged in Western Australia where O. idmo is known to occur experienced a hot fire in the recent past (Field *pers. comm.*). McArthur *et al.* (1997) note that *Camponotus terebrans* is one of the first ant species to colonise disturbed sites.

Conservation Status

National conservation status

The Large Brown Azure Butterfly has not been listed under the **Environment Protection and Biodiversity Conservation Act 1999**, although it is considered endangered by Douglas (1995).

Victorian conservation status

The Large Brown Azure Butterfly has been listed as threatened under the **Flora and Fauna Guarantee Act 1988**.

Decline and threats

While one female was observed near Rose's Gap in the Grampians National Park in December 1970 (Douglas 1995) there have been no specimens collected within Victoria since 1945. The Large Brown Azure Butterfly may be extinct in Victoria (Field *pers. comm.*).

It seems likely that the Large Brown Azure Butterfly has always been very rare and local in occurrence, even prior to European settlement. The species has clearly declined in both Victoria and South Australia, and, apart from the recent rediscovery in South Australia, all previously known populations may now be extinct, largely because of land clearing (Field 1997). The last confirmed capture in Victoria was in 1945 at Kiata.

In its final recommendation the Scientific Advisory Committee (SAC 1996) has determined that the Large Brown Azure Butterfly is very rare in terms of abundance and distribution.

Wider conservation issues

O. idmo belongs to a small species complex (within the genus *Ogyris*), which represents a unique element in the butterfly fauna of Australia. From an evolutionary viewpoint the biology and life histories of the two *O. idmo* subspecies and *Ogyris subterrestis* ('Mildura Ogyris'), which form the greater part of this species complex, are especially interesting; the larvae of these taxa appear to be totally dependent on ants for their food supply and seem to be without a larval host plant (Field 1992).

Previous Management Action

- It is commendable that the Entomological Society of Victoria placed the Large Brown Azure Butterfly (and one other butterfly species), under 'Limited Voluntary Protection' in 1973. This stipulated that no more than two adult specimens could be taken (netted) per collector per year, and that no larvae or pupae could be collected at any time.
- Voluntary survey work was undertaken in western Victoria by several entomologists

during the 1980s and early 1990s in an unsuccessful attempt to locate extant populations of the Large Brown Azure Butterfly. The majority of these surveys have been carried out within the Little Desert and Grampians National Parks.

- Part 2 (Family Lycaenidae) of an Australian Nature Conservation Agency commissioned recovery plan for threatened diurnal Lepidoptera in north-western Victoria has recently been completed by the author (Douglas 1995). This recovery plan details conservation strategies for thirteen nationally and/or regionally threatened lycaenid butterflies and includes the Large Brown Azure Butterfly. Recommendations are made under action 3 of this report for future surveys which will probably need to be conducted during consecutive years to determine if Victorian populations of this species still exist. Noelker and Douglas implemented the first of these surveys during October, November and December 1995 with no success. The Department of Natural Resources and Environment (NRE) provided the funding for this survey.

Major Conservation Objective

Determine whether any extant populations of the Large Brown Azure Butterfly occur in Victoria.

Intended Management Action

The intended management actions listed below are further elaborated in Actions for Biodiversity Conservation database. Detailed information about the actions and locations, including priorities, is held in this system and will be provided annually to land managers and other authorities.

1. Survey the following areas for the presence of the Large Brown Azure Butterfly and/or *Camponotus terebrans*:

    - Big Desert Wilderness Park (potential suitable habitat occurs in this area which makes a survey worthwhile). Conduct in late October.
    - Little Desert National Park and adjacent areas of uncleared land. Conduct in late October.
    - Mt Arapiles-Tooan State Park area (including the Jilpanger Scrub). Conduct in mid-November to early December.
    - Grampians National Park (especially its northern and western boundaries). Conduct in mid-November to early December.
    - Portland area (particularly in heathland and open coastal habitats). Conduct in mid-December.

    Responsibility: DSE (Biodiversity & Natural Resources Division, Parks Victoria

2. Treat any sightings gathered from the public as confidential, and investigate credible records.

    Responsibility: DSE (Biodiversity & Natural Resources Division, Parks Victoria

3. Provide information and advice, including maps, regarding the location and management of Large Brown Azure Butterfly sites to landholders, land managers and other authorities, especially Catchment Management Authorities and local government authorities.

    Responsibility: NRE (SW Region)

4. Incorporate actions to protect, enhance and restore Large Brown Azure Butterfly habitat into Regional Catchment Strategies or their subordinate strategies via Biodiversity Action Plans. Implement these actions, according to priority, as resources become available, in conjunction with other agencies, community groups and landholders.

    Responsibility: Catchment Management Authorities

5. Incorporate information regarding the location and management of Large Brown Azure Butterfly sites into local planning schemes, including environmental significance overlays, and apply the Victorian Planning Provisions so as to protect these sites.

    Responsibility: Shires

6. Increase community awareness of the Large Brown Azure Butterfly, its attendant ant and the heathland habitats where it and related species occur.

    Responsibility: DSE (Biodiversity & Natural Resources Division

7. Train relevant staff in the identification and seasonal activity of the butterfly.

    Responsibility: DSE (Biodiversity & Natural Resources Division, Parks Victoria

8. Encourage research to determine the genetic relatedness between the scattered and fragmented populations of Ogyris idmo.

    Responsibility: DSE (Biodiversity & Natural Resources Division

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Compiled by Fabian Douglas, consultant entomologist

Further information can be obtained from Department of Sustainability and Environment Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website: http://www.dse.vic.gov.au

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