

Heteronympha cordace wilsoni Western Bright-eyed Brown Butterfly

Taxonomy

Heteronympha cordace wilsoni Burns, 1948

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2002).

Categorised as Regionally extinct in the 2009 Advisory list of threatened invertebrate fauna in Victoria (DSE 2009).

Proposed conservation status

Critically Endangered in Victoria

Criteria B1ab(ii,iii,v)+2ab(ii,iii,v)

Species Information

Description and Life History

Heteronympha cordace wilsoni is smaller than the typical *H. cordace cordace*. The orange markings on the uppersides of the wings are paler and more extensive, and the eyespots much smaller. The underside ground colour is paler with the markings on the hind wing obscure and ill-defined. The eyespots on the underwing are very small in the female and usually absent or only tiny in the male. Larvae feed on sedges (*Carex* species, family Cyperaceae) mainly *Carex appressa* (Tall Sedge) (Braby 2000). Other plant hosts are *C. appressa*, *C. fascicularis* and *C. gaudichaudiana*.

Generation Length

The generation length of *Heteronympha cordace wilsoni* is estimated to be 1 year. There is insufficient field observations to inform the generation length, so it is estimated based on the time between adult emergences.

Distribution

H. cordace is endemic to Australia where it is restricted to the south-east, including Tasmania. *H. cordace wilsonii* is restricted to far south-western Victoria, where it has been recorded from around Dartmoor on the lower Glenelg River, and possibly also from the southern Grampians.

Habitat

The taxon is restricted to open swampy areas and creeks, usually with a sparse cover of *Melaleuca* and *Leptospermum* spp., where dense stands of the larval food plant grow (Braby 2000). It also occurs in swampy areas near the banks of the Glenelg River downstream from Nelson.

Threats

The Bright-eyed Brown Butterfly is threatened by habitat loss and fragmentation as a result of wetland drainage for agricultural development. The lower Glenelg population was thought to be extinct (Braby 2000) but still persists in low numbers (Field 2013).

Caterpillars are particularly at risk from altered water regimes. Increased fire frequency and intensity and increased temperatures due to climate change are all assumed to be threats to the conservation of this taxon.

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Western Bright-eyed Brown Butterfly

IUCN Criteria

Criterion A. Population size reduction. Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered	Endangered	Vulnerable
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p>	<p>based on any of the following:</p>	<p>(a) direct observation [except A3]</p> <p>(b) an index of abundance appropriate to the taxon</p> <p>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</p> <p>(d) actual or potential levels of exploitation</p> <p>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</p>
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Evidence:

Ineligible under Criterion A

There is insufficient evidence to determine whether there has been or will be a reduction in population sufficient to meet any threshold for Criterion A.

Heteronympha cordace wilsoni

Western Bright-eyed Brown Butterfly

Criterion B. Geographic range in the form of either B1 (extent of occurrence) and/or B2 (area of occupancy)			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

Evidence:

Eligible under Criterion B1 as Critically Endangered

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 8 km², based on accepted, post-1970 records from the Victorian Biodiversity Atlas (VBA).

Individual occurrences are considered severely fragmented based on the taxon's limited dispersal ability, the barriers to dispersal and/or the lack of habitat separating them. Such fragmentation precludes the possibility of recolonisation in the event of local extinction.

It is estimated to have 1 location and has a continuing decline in (ii), (iii) and (v) above. as a result of wetland drainage and climate change.

Eligible under Criterion B2 as Critically Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 8 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the VBA. As Above, it is severely fragmented, has 1 location and has a continuing decline in (ii), (iii) and (v) above.

Heteronympha cordace wilsoni

Western Bright-eyed Brown Butterfly

Criterion C. Small Population size and decline		Critically Endangered	Endangered	Vulnerable
Number of mature individuals		< 250	< 2,500	< 10,000
AND at least one of C1 or C2				
C1	An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future):	25% in 3 years or 1 generation (whichever is longer)	20% in 5 years or 2 generations (whichever is longer)	10% in 10 years or 3 generations (whichever is longer)
C2	An observed, estimated, projected or inferred continuing decline AND least 1 of the following 3 conditions:			
(a)	(i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
	(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b)	Extreme fluctuations in the number of mature individuals			

Evidence:

Ineligible under Criterion C as Data Deficient

Despite regular population observations, no extensive monitoring or surveys have been conducted and no reliable estimate of the total population size for the taxon is available.

Criterion D. Very small or restricted populations		Critically Endangered	Endangered	Vulnerable
Number of mature individuals (observed or estimated)		< 50	< 250	< 1,000
D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the species to critically endangered or Extinct in a very short time.		-	-	D2. Typically: AoO < 20 km ² or number of locations ≤ 5

Evidence:

Eligible under criterion D2 as Vulnerable

The taxon is estimated to be very restricted.

Criterion E (Quantitative Analysis) was not addressed as the taxon does not have a detailed Population Viability Analysis.

References

Braby, M. F. (2000) *Butterflies of Australia: Their Identification, Biology and Distribution*. Vol. 2. pp. 518-520. Australian National Insect Collection/CSIRO Entomology: Canberra. CSIRO Collingwood.

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Heteronympha cordace wilsoni Western Bright-eyed Brown Butterfly

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