



Caliagrion billinghursti Large River Damselfly

Taxonomy

Caliagrion billinghursti (Martin, 1901)

Caliagrion is a monotypic genus of the Coenagrionidae, the largest of the damselfly families with over 1200 species worldwide (Suhling et al. 2015). In Australasia there are over 152 species across 21 genera of damselfly (Suhling et al. 2015).

Current conservation status

Listed as threatened under the *Flora and Fauna Guarantee Act 1988* (SAC 2000).

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Based on restricted distribution, the taxon could be VU D2, but note that there have not been any targeted surveys for this species in the past 30 years.

Species Information

Description and Life History

The Large River Damsel is a large damselfly, with a total length of 30 mm. Males have thick blue ring markings on the abdomen and down the abdomen sides, reducing to a narrow ring with no lateral markings towards the tail, which has a distinctly blue tip. There appears to be a single line across the postocular area and across the frons. Females are similar to males, except they are more robust, have a heavily ringed abdomen, have pale lateral markings all the way along the abdomen, and have no pale tail tip.

Generation Length

The generation length of *Caliagrion billinghursti* is inferred to be 1 to 2 years. Although the generation length and life history details are unknown for this taxon, it is likely to be univoltine to bivoltine based on other Odonates (Hawking and New 1996).

Distribution

This taxon has been recorded in south-eastern Queensland, eastern NSW, and Victoria. It has only been recorded from one site in Victoria and may possibly be extinct (Dow 2017), however recent targeted surveys have not been undertaken. This taxon is possibly at the southern extreme of its range in Victoria and may be locally rare.

Habitat

The taxon is typically found in larger waterbodies, such as lakes and marshes which have large expanses of open water, where it has been observed to be flying (G. Theischinger pers. comm. to Dow 2017). It is known to inhabit slow flowing areas of rivers, riverine pools, lakes and marshes (Theischinger and Endersby 2009).

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The taxon has very restricted records, the paucity of which suggests that there may be unknown factors involved in its habitat choices and that it is more specialised than is currently known.

Threats

Dow (2017) states the threats to this taxon are not known, and the causes of its possible extinction in Victoria do not appear to have been documented or understood. However, since it occurred in the same habitat as *Hemiphysalis mirabilis*, its apparent decline in the state may be due to the same factors, such as over-grazing by cattle and other agricultural practices (Dow 2017).

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.

There is insufficient information to infer the past population. The records are scarce, old, and recent targeted surveys have not been undertaken. It is not clear if this is because of genuine scarcity or some other reason, but it appears likely that this is at best a locally occurring species. It appears likely that it has experienced a decline, but whether this is still ongoing is not clear. The population in Victoria may already be extinct.

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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:

Ineligible under Criterion B

The Extent of Occurrence (EoO) across the taxon's range is estimated to be 4 km² and the Area of Occupancy (AoO) is estimated to be 4 km², but other thresholds under this criterion have not been met.

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 <u>C1</u> or <u>C2</u>				
<u>C1</u>	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)
<u>C2</u>	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				

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Evidence:

Ineligible under Criterion C as Data Deficient

There is insufficient information to make definitive statements about population sizes and health of this species. The records are scarce, old and recent targeted surveys have not been undertaken. It is not clear if this is because of genuine scarcity or some other reason, but it appears likely that this is at best a locally occurring species. It appears likely that the species has experienced a decline, but whether this is still ongoing is not clear. The population in Victoria may already be extinct.

Criterion D - Very small or restricted population [Ⓜ]			
[Ⓜ]	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. It has a restricted distribution, with an AoO of 4 km² and one location, which suggests that the taxon capable of becoming Critically Endangered or Extinct within a time frame of one or two generations. due to stochastic events.

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

References

Dow, R.A. (2017). *Caliagrion billinghursti*. The IUCN Red List of Threatened Species 2017: <http://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T14263430A59256518.en>.

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