Threatened Species Assessment

Plectrotarsus gravenhorstii
Caddisfly

Taxonomy

Plectrotarsus gravenhorstii Kolenati, 1848

Current conservation status

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

Proposed conservation status

Endangered in Victoria

Criterion B2ab(iii,v)

Species Information

Description and Life History

Plectrotarsus gravenhorstii is among the larger Australian species of caddisfly. The larvae make a case of detritus but do not swim with this case. The larvae are found in slow flow areas of rivers and creeks among macrophytes and eat macrophyte detritus (Neboiss, 1987). The adults have very elongate mouthparts, which is quite unusual in the Trichoptera. Unlike the majority of caddis adults, the adults of *P. gravenhorsti* are found during the day often on flowering shrubs. This combination led Neboiss (1987) to suggest the adults are amongst the few adult caddis to feed in the adult stage.

Generation Length

The generation length of *Plectrotarsus gravenhorstii* is inferred to be 8 to 18 months. This based on other Australian Trichoptera taxa and the fact that the Neboiss (1987) predicted the adults are able to feed. This suggests they may live longer than adults of other taxa.

Distribution

Historically, this species was widespread across Victoria, mostly in coastal regions, but was not entirely restricted to the coastal zone. The predominantly coastal distribution may partly reflect the presence of heathland and other habitats that provide plenty of flowering plants to feed the adults during their flight period. Records exist for Wilsons Promontory, the Mornington Peninsula, East Gippsland and also west of the Grampians.

Habitat

Larvae inhabit shallow, vegetation-rich lakes, backwaters streams and wetlands (Neboiss 1987). Dean (2000) adds that specimens have been recorded from small reservoirs and temporary wetlands, although dense macrophytes remain an important feature. Adults are commonly found on flowering shrubs on which they are thought to feed (Neboiss 1987).

Threats

It is assumed that general threats to aquatic ecosystems would represent current ongoing threats to the larvae. Threats to the adult habitat are not known but are likely to include impacts from agricultural practices and loss of woody vegetation. Stresses likely to be associated with altered hydrological regimes are associated with water resource management and may be exacerbated by climate change. Increased numbers of invasive species such

as carp and predatory fish may also impact this species. Poor water quality which may lead to loss of vegetation, a key habitat feature, may also be of concern.

The bushfires of 2019/2020 are believed to have impacted in their food source plant. The water quality of the larval habitat is also likely to been impacted by the fires.

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%

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

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 no current information on the size of any existing populations. Decline cannot be estimated since it is unclear when identified threats are likely to result in significant decline in population size or any other demographic parameter within the ten-year timeframe.

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 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy (AOO)	< 10 km²	< 500 km²	< 2,000 km²
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 B2 as Endangered

The Area of Occupancy (AoO) across the taxon's range is estimated to be 56 km², based on 2 x 2 km grids derived from accepted, post-1970 records in the Victorian Biodiversity Atlas.

It is suspected to have 4 locations, at which the suite of threats may affect all individuals present.

It has a continuing decline in (iii) and (v) above, due mainly to loss and reduced quality of habitat and the impact from introduced predatory fish. The bushfires of 2019/2020 are believed to have impacted the adult food plants, also the water quality of the larval habitat is likely to been impacted by the fires.

Note that there have been no recent targeted surveys to confirm this.

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

No reliable estimate of the total population size of the species is available.

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 km2 or number of locations ≤ 5

Evidence:

Eligible under Criterion D2 as Vulnerable

The taxon is suspected to be very restricted.

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

References

Dean, J. (2000). Preliminary keys for the identification of the Australian caddisfly larvae of the families Antipodoeciidae, Atriplectididae, Limnephilidae, and Plectrotarsidae. *Co-operative Research Centre for Freshwater Ecology, Identification Guide No. 31*. Albury. 16 pp.

DSE (2009) *Advisory List of Threatened Invertebrate Fauna in Victoria* - 2009. Department of Sustainability and Environment, East Melbourne, Victoria. Retrieved from: https://www.environment.vic.gov.au/__data/assets/pdf_file/0016/50452/Advisory_List_of_Threatened_Invertebrate_Fauna_2009_FINAL_Sept_2009.pdf

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