Threatened Species Assessment

Temognatha sanguinipennis
Jewel Beetle

Taxonomy

Temognatha sanguinipennis (Gory & Laporte, 1838)

Current conservation status

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

Proposed conservation status

Vulnerable in Victoria

Criterion D2

Species Information

Description and Life History

The taxon has bright orange wingcases and a red and black head. Larvae of *Temognatha* spp. are endophagous feeders (i.e. borers) in the living timber of their respective larval host plants. Those of *T. sanguinipennis* are likely to be borers in the upper branches of large *Eucalyptus* spp., possibly *E. obliqua* (Messmate) and/or *E. melliodora* (Yellow Box). Adults are on the wing during the summer months and are known to visit flowering eucalypts to feed on nectar. However, they rarely observed alive but are occasionally found dead on forest paths and roads after they have completed their life cycle, died and fallen out of surrounding large eucalypts.

Generation Length

The generation length of *T. sanguinipennis* is inferred to be 2 to 5 years. Although the generation length is uncertain, it is evident that most and possibly all of the *Temognatha* spp. have regionally synchronised adult emergences. In some species these adult emergences can be up to seven or more years apart at a given locality. However, there is some evidence to suggest that in some instances a period of only one year may elapse between adult emergences of this species at different localities. This is based on over 20 individuals of a large red *Temognatha* species (that due to habitat type and locality may have been *T. sanguinipennis*) being observed in flight at the summit of Mt Piper near Broadford by Dr Michael Braby in 2015. Subsequently four live specimens were found in 2017 in the Grampians National Park. Despite these two records only being 14 months apart, it is highly unlikely that *T. sanguinipennis* has a twelve month life cycle, as it is now widely suspected that most and possibly all of the *Temognatha* spp.(and related genera) take much longer than this to complete a generation.

Distribution

Previously there were multiple records from around Melbourne, from the north (Kilmore), east (Warburton) and south (Frankston). Current extant records include those from the Grampians, near Kilmore, Mt Piper, Cranbourne Botanic Gardens, near Warburton and in Dandenong Ranges National Park.

Habitat

The main habitat types are remnant tall open eucalypt forest and eucalypt woodland, containing Messmate and/or Yellow Box throughout the north-west of Victoria.

Threats

It is highly likely that the taxon has declined significantly in numbers and range since European settlement, due to the clearing of eucalypt woodland and open forest habitats for agriculture. There has been widespread loss of eucalypt woodland/forest to the north, east and south of Melbourne where many of the older records of *T. sanguinipennis* fall.

The main threats currently operating are assumed to be those leading to degradation and loss of woodland and forest habitats: severe droughts, altered fire regimes and localised impacts from land use change. The taxon is confined to fragmented areas within its former range, and this fragmentation makes it prone to the effects of human activities or stochastic events.

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.

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:

Ineligible under Criterion B

There is insufficient information to determine the Extent of Occurrence or Area of Occupancy.

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

It is suspected that there are 3000 mature individuals, but this qualifier is too weak. There are possibly seven extant populations, two in national parks (approx.1,300), three in crown reserves (approx. 400), and two in protected private land (approx. 1,300).

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 estimated to be very restricted. It has a restricted distribution, with all individuals in small fragmented subpopulations, such that this restrict makes it capable of becoming Critically Endangered or Extinct within a time frame of one or two generations, in response to the identified threats.

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

References

Burns, G. G. and Burns, A. J. (1992). The Distribution of Victorian Jewel Beetles - an ENTRECS project. *Occasional Papers from the Museum of Victoria* 5: 1-53.

DSE (2009) *Advisory list of threatened invertebrate fauna in Victoria - 2009.* Department of Sustainability and Environment, Melbourne. (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)