

**Advice to the Minister for the Environment, Heritage and the Arts
from the Threatened Species Scientific Committee (the Committee)
on Amendment to the list of Threatened Species under the
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)**

1. Scientific name (common name)

Tasmanipatus anophthalmus (Blind Velvet Worm)

2. Reason for Conservation Assessment by the Committee

This advice follows assessment of information gathered through the Commonwealth's Species Information Partnership with Tasmania, which is aimed at systematically reviewing species that are inconsistently listed under the EPBC Act and the Tasmanian *Threatened Species Protection Act 1995*.

The Blind Velvet Worm is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995*. The Committee provides the following assessment of the appropriateness of the species' inclusion in the endangered category in the EPBC Act list of threatened species.

This is the Committee's first consideration of the species under the EPBC Act.

3. Summary of Conclusion

The Committee judges that the species has been demonstrated to have met sufficient elements of Criterion 2 to make it **eligible** for listing as **endangered**.

4. Taxonomy

The species is conventionally accepted as *Tasmanipatus anophthalmus* (Blind Velvet Worm) (Ruhberg et al., 1991).

5. Description

The Blind Velvet Worm (Onychophora: Peripatopsidae) is an invertebrate with a soft, flattened and cylindrical body covered in minute papillae, giving it a velvet-like appearance. The Blind Velvet Worm has 15 pairs of non-jointed legs with well-developed feet and claws and has antennae extending from the head. When at rest it measures 25 to 35 mm, although when walking it extends to approximately 50 mm in length. The Blind Velvet Worm lacks eyes and, except for the dark brown tips of its claws and jaws, is completely white (DPIW, 2005).

6. National Context

The Blind Velvet Worm is endemic to Tasmania. Its range is restricted to the St Marys area in the northeast of the state (Mesibov, 1997). The most compact core of its distribution is centered on the Mt Elephant area and the catchments of Lower Marsh, Piccaninny and Wardlaws Creeks (Mesibov, 1997; DPIW, 2005). The Blind Velvet Worm is listed as endangered under the Tasmanian *Threatened Species Protection Act 1995*.

7. Relevant Biology / Ecology

The Blind Velvet Worm is terrestrial and primarily inhabits dry eucalypt forests. As the species' permeable skin makes it prone to water loss it is restricted to moist micro-habitats, and predominantly occurs deep within the soft rotting centre of decaying eucalypt logs. The species' prime habitat is forest containing numerous rotting eucalypt logs, where no high-intensity or frequent fires have occurred within at least 20 years (Bryant and Jackson, 1999). The species is most often found along streams, gullies and shaded east and south facing slopes (Mesibov, 1997). The species is nocturnal and predatory, feeding on litter-dwelling invertebrates, which it catches by ejecting streams of sticky fluid from appendages on its head. The Blind Velvet Worm lives for several years and reaches sexual maturity at approximately one year of age (DPIW, 2005). The species gives birth to 16–18 live young at a time, however there are limited data on the species' breeding system (Bryant and Jackson, 1999).

8. Description of Threats

Any activity that results in the depletion of decaying logs within the species' potential range is a threat to the Blind Velvet Worm (DPIW, 2005).

A major threat to the Blind Velvet Worm is the clearance of native forest. In areas of non-reserved private property or crown land the conversion of native forest to plantation or clearance for agriculture is a threat to the Blind Velvet Worm (DPIW, 2005). About half of all recorded localities for the species are in State Forest. Although these areas may be subject to extensive forestry activities, most Blind Velvet Worm habitat is not ideally suited to conversion to plantation. Moreover, the Tasmanian forestry industry has implemented a policy to manage populations of Blind Velvet Worms in wood production forests. Forestry Tasmania recommend only native forest silviculture, e.g. light selective logging, as the main form of forestry activity within the species' range. This practice is identified as a minor threat to the species, as it does not lead to a massive reduction in decaying logs (M. Wapstra, pers. comm., 2007).

Additional threats include inappropriate fire regimes or wildfire. Fire of high frequency or intensity can degrade or eliminate suitable habitat by clearing leaf-litter and drying out suitable logs (DPIW, 2005). The level of threat is currently increased due to the effect of drought on fuel load conditions within the species' range (M. Wapstra, pers. comm., 2007). Firewood collection also poses a threat to the Blind Velvet Worm. Although logs that provide habitat for the species are generally unsuitable for use as firewood, logs in earlier stages of decay may be targeted, thus depleting the recruitment of habitat logs (DPIW, 2005).

The Blind Velvet Worm may also be threatened through over-collecting and the destruction of microhabitats by research workers and collectors (Mesibov and Ruhberg, 1991).

9. Public Consultation

The information used in this assessment was made available for public exhibition and comment for 30 business days. No comments were received.

10. How judged by the Committee in relation to the criteria of the EPBC Act and Regulations

The Committee judges that the species is **eligible** for listing as **endangered** under the EPBC Act. The assessment against the criteria is as follows:

Criterion 1: It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers

The full impact of European settlement on Blind Velvet Worm numbers is not known, particularly as the species was not identified until 1987. However, given the scale of reduction in previously continuous eucalypt forest throughout northeast Tasmania as a result of clearing for agriculture, mining and forestry, a historical reduction in numbers of some magnitude can be inferred (Mesibov, 1988).

Although the Blind Velvet Worm has been well surveyed over the past 20 years, density and abundance are most often expressed as a search success rate, not absolute numbers found (M. Wapstra, pers. comm., 2007). Therefore, although a relatively large area of the species' potential range has been converted to plantation or agricultural land over the past decades, there are no quantitative data to clearly demonstrate that a reduction in numbers of the Blind Velvet Worm has occurred.

In addition to this inferred loss of habitat through land clearance, a wildfire burnt over 30,000 hectares around the St Marys area in November 2006 (TFSO, 2006). This fire may have reduced Blind Velvet Worm numbers, but the effect on the species has not yet been assessed.

Some of the species' range occurs in state forest and non-reserved private land which may be subject to forestry activities or land clearing for agriculture in the immediate future (M. Wapstra, pers. comm., 2007). While the species' geographic distribution may decline in the future due to threats such as land clearance and wildfire, there are no quantitative data to establish that numbers of Blind Velvet Worms will continue to decline in the immediate future at a particular rate.

Although the Committee judges that the species is suspected to have undergone a reduction in numbers, there are insufficient data available to assess the magnitude of this reduction. Similarly, though the number of individuals is likely to decline due to the threats listed above, there are insufficient data to quantify any future reduction. Therefore, the species has not been demonstrated to have met each of the required elements of Criterion 1, and is **not eligible** for listing under this criterion.

Criterion 2: Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited

The species' extent of occurrence is estimated to be 237 km² by DPIW (2007). However, by excluding extensive areas of agricultural land within this range, Mesibov calculated the extent of occurrence to be approximately 152 km² (Mesibov, 1997). The most compact core of distribution, centered on the Mt Elephant area and the catchments of Lower Marsh, Piccaninny and Wardlaws Creeks, comprises 41 km² (Mesibov, 1997; DPIW, 2005). The Committee considers the species' geographic distribution to be restricted.

A further limitation to the geographic distribution of the Blind Velvet Worm is its parapatry with *Tasmanipatus barrette* (Giant Velvet Worm). The two species' ranges meet, but do not

overlap, along a line just north of Chain of Lagoons, to the St Marys Pass and Mt Nicholas area. This is the only documented case of parapatry in Onychophora and the reason for this lack in overlap remains unexplained (Mesibov and Ruhberg, 1991).

The Blind Velvet Worm has been very well surveyed, with over 250 searches for the species conducted over the last 20 years. While the exact nature of the distribution within its range, e.g. variation in abundance, is not well understood, the species' extent of occurrence is unlikely to be extended by more than a few kilometers. Therefore, the current known distribution of the species is likely to be very close to, if not the actual, distribution (Mesibov, 1997).

With such a restricted distribution, the species is vulnerable to stochastic events such as wildfire. The threat of wildfire is particularly problematic as the species' specific microhabitat is highly susceptible to being altered by the effects of such events and, generally, the species is not found in logs that have been burned within the last 20 years.

Throughout the species' geographic distribution, land management regimes vary. The species' range falls within areas of private land without conservation covenants that may be subject to land clearance, and areas of State Forest that may be subject to forestry activities (M. Wapstra 2007, pers. comm.). These activities may result in fragmentation of the species' already restricted geographic distribution.

The Committee considers that the species' restricted geographic distribution is precarious for its survival due to the threat of habitat modification through either land clearance or wildfire. Therefore, the species has been demonstrated to have met the relevant elements of Criterion 2 to make it **eligible** for listing as **endangered**.

Criterion 3: The estimated total number of mature individuals is limited to a particular degree; and either

- (a) evidence suggests that the number will continue to decline at a particular rate; or**
- (b) the number is likely to continue to decline and its geographic distribution is precarious for its survival**

Survey results for the Blind Velvet Worm do not provide an estimate of the number of individual specimens in an area. There are insufficient data available to estimate whether the total number of mature individuals is very low, low, limited, or not limited.

As discussed under Criterion 2, the species' distribution is restricted and precarious for its survival due to the threat of habitat modification through land clearance or wildfire. While the Committee judges that the number is likely to decline, as discussed under Criterion 1, there are no data to quantify future decline in the number of individuals. There are insufficient data available to suggest whether the number will decline at a very high, high, substantial, or not substantial rate. Therefore, as the species has not been demonstrated to have met all of the required elements of Criterion 3, it is **not eligible** for listing under this criterion.

Criterion 4: The estimated total number of mature individuals is extremely low, very low or low

An estimate of the total number of mature Blind Velvet Worms is not available (DPIW, 2005). Density and abundance of the Blind Velvet Worm is most often expressed as the search success rate in specific locations rather than the total number of individuals present in an area (M. Wapstra, pers. comm., 2007). Sampling is limited as, being a cryptic species that occurs deep inside logs, surveys of the Blind Velvet Worm require logs to be broken up and the microhabitat destroyed. The number of individuals in an area would also depend on a range of factors, such as the number and suitability of logs, and the number of individuals within different logs may also vary greatly.

There are insufficient data available to estimate whether or not the total number of mature individuals is extremely low, very low, or low. Therefore, as the species has not been demonstrated to have met this required element of Criterion 4, it is **not eligible** for listing in any category under this criterion.

Criterion 5: Probability of extinction in the wild that is at least:

- (a) 50% in the immediate future; or**
- (b) 20% in the near future; or**
- (c) 10% in the medium-term future.**

There are insufficient data available to estimate a probability of extinction of the species in the wild over a relevant timeframe. Therefore, as the species has not been demonstrated to have met the required elements of Criterion 5, it is **not eligible** for listing in any category under this criterion.

11. CONCLUSION

Conservation Status

This advice follows assessment of information gathered through the Commonwealth's Species Information Partnership with Tasmania, which is aimed at systematically reviewing species that are inconsistently listed under the EPBC Act and the Tasmanian *Threatened Species Protection Act 1995*.

The Committee judges that the Blind Velvet Worm has a restricted geographic distribution, with an extent of occurrence of around 152 km². This geographic distribution is precarious for the survival of the species due to the threat of significant habitat modification through land clearance for agriculture, forestry activities or wildfire. Therefore, the species has been demonstrated to have met sufficient elements of Criterion 2 to make it **eligible** for listing as **endangered**.

Recovery Plan

The Committee considers that there should be a recovery plan for this species.

As forest clearing and management activities continue to pose a threat to the species, a recovery plan will provide mechanisms to ensure appropriate long-term management of the species' habitat.

12. Recommendations

(i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **endangered** category:

Tasmanipatus anophthalmus (Blind Velvet Worm)

(ii) The Committee recommends that there should be a recovery plan for this species.

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Chair
Threatened Species Scientific Committee

References cited in the advice

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