THREATENED SPECIES LISTING STATEMENT

Mole Creek Cave Pseudoscorpion, *Pseudotyrannochthonius typhlus* Dartnall 1970

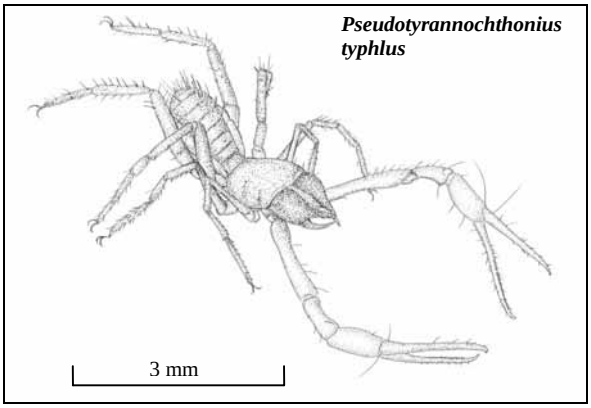
Status

Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999.....Not listed

Tasmanian *Threatened Species Protection Act 1995*……..…..Rare

Description

As the name implies, the group of arachnids known as Pseudoscorpions are the so-called 'false scorpions'. All members of this group are small, the largest being up to approximately 6 mm in length. Pseudoscorpions occur in caves in many parts of the world, with 16% of all pesudoscorpions being cavernicoles, or cave-dwellers. The Mole Creek cave pseudoscorpion belongs to the family Chthoniidae, a large family of world-wide distribution with numerous cave dwelling species (Eberhard *et al.* 1991). Cave-dwelling pseudoscorpions tend to be highly specialised for a cave existence, including loss of body colouring, a reduction or complete loss of eyes, and a lengthening of legs and other appendages.

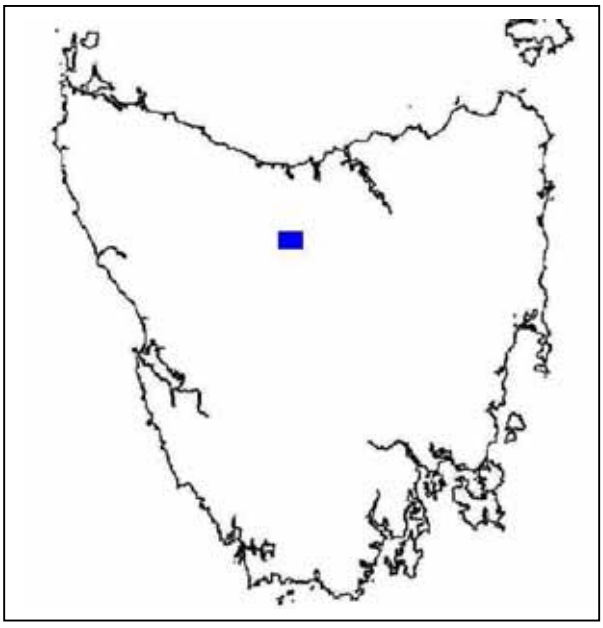


lllustration: Karen Richards

The genus *Pseudotyrannochthonius* is a relict Gondwanan group with 10 Australian species, six of which are known only from caves. Two species of cave-dwelling *Pseudotyrannochthonius* have been described from Tasmania, the Mole Creek cave pseudoscorpion from the Mole Creek cave system and a second species from Hastings cave in the south. The Mole Creek cave pseudoscorpion is a moderate-sized pseudoscorpion (2.8 mm body length) with large and broad pincers (chelicera) and a complete absence of eyes. For a full description refer to Dartnall (1970).

Distribution and Habitat

The Mole Creek cave pseudoscorpion is known only from the Mole Creek karst system in central north Tasmania. Within this cave system it is fairly widely distributed, having so far been located in 10 caves. However, the species is extremely rare in the caves where it has been found, with the total number of animals collected standing at only 12 (Eberhard 2000). The Mole creek pseudoscorpion is found from the twilight zone near the mouth of caves to the deep cave zone. The species occurs on both calcite and bedrock surfaces and on sediment banks beside streams, often in association with animal bones, tree roots and colonies of cave spiders (Eberhard *et al.* 1991).



Known distribution of *Pseudotyrannochthonius typhlus.*

Important Locations

Pseudotyrannochthonius typhlus is endemic to the Mole Creek karst system. To date, the species has been recorded from 10 caves, including Georgies Hall, Kellys Pot, Shiskebab, Scotts Cave, Baldocks Cave, Wombat Cave, Devils Drainpipe, Kubla Khan Cave, Genghis Khan Cave and Little Trimmer Cave. The Mole Creek karst system is vital to the survival of this species.

Threats, Limiting Factors and Management Issues

Quarrying, land-clearance and changes to drainage and water nutrient levels due to forestry and farming practices have been identified as potential threats to populations of *P. typhlus*. This species is extremely rare and likely to be subject to chance events which could significantly impact on a population within a cave. A number of the caves in which the species is known to occur are located on private land and are vulnerable to land practices which could threaten individual cave habitats. Trampling of individuals and degradation of cave habitat through trampling are also potential threats to this species which require further investigation.

Conservation Assessment

Historical Distribution

Little is known of the past distribution of the Mole Creek cave pseudoscorpion. However, it appears likely that the species is naturally restricted to the Mole Creek karst system.

Area Currently Occupied

Mole Creek karst system

Population Estimate

Unknown but likely to be naturally low in numbers.

Reservation Status

A number of caves containing the Mole Creek cave pseudoscorpion are located within Forest Reserves or the Mole Creek Karst National Park. Other known cave locations are on State Forest, private land or unreserved public land.

Assessment Criteria

Pseudotyrannochthonius typhlus meets the criteria for listing as rare on the Tasmanian *Threatened Species Protection Act 1995* because the species is subject to stochastic risk of endangerment and has an area of occurrence of less than 2000 km^2.

Recovery Program

Objectives

- To protect existing Mole Creek cave pseudoscorpion populations from adverse impacts

Previous Management Actions

- An invertebrate fauna survey of over 130 caves throughout Tasmania was carried out by Eberhard *et al.* (1991). This study confirmed the restricted distribution of this species to the Mole Creek karst system.
- An intensive survey of the invertebrate fauna of caves within the Mole Creek Karst National Park by Eberhard (2000) located a number of new cave locations for the species.

Actions Needed

- Provide information on the location of the species to land managers to ensure no activities adversely affects the species.
- Undertake further survey work to identify additional caves in which the species occurs.
- Undertake research to determine the habitat requirements of *P. typhlus*.
- Conduct an investigation into, and regularly monitor, the condition of cave habitats.
- Investigate the impacts of cave users on the species.
- Facilitate research into the ecology of the species to determine population numbers, life cycle, diet and behaviour.

Source Material

References

- Eberhard, S. M. (2000). Reconnaissance survey of cave fauna management issues in the Mole Creek Kast National Park, Tasmania. Nature Conservation Report 2000/1, Department of Primary Industries, Water and Environment, Hobart.
- Eberhard, S. M., Richardson, A. M. M. and Swain, R. (1991). The invertebrate cave fauna of Tasmania. Zoology Department of Tasmania, Hobart.
- Dartnall, A. J. (1970). Some Tasmanian Chthoniid pseudoscorpions. *Papers and Proceedings of the Royal Society of Tasmania* **104**: 65-68.
- Parks and Wildlife Service (2004). *Mole Creek Karst National Park and Conservation Area Management Plan 2004.* Parks and Wildlife Serve, Department of Tourism, Parks, Heritage and the Arts, Hobart.

Specialist Advice

- Stefan Eberhard, C/- Nature Conservation Branch Department of Primary Industries, Water and Environment, Tasmania.
- Ian Houshold, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Tasmania.

Review and Further Information

Statement prepared: June 2005

Prepared by: Stephen Mallick and Michael Driessen.

Review date: When new information received.

Cite as: Threatened Species Unit (2005). Listing Statement Mole Creek Cave Pseudoscorpion *Pseudotyrannochthonius typhlus*, Nature Conservation Branch, Department of Primary Industries, Water and Environment, Tasmania.

Further information: Threatened Species Unit, Nature Conservation Branch, GPO Box 44 Hobart Tasmania Australia 7001. Ph 03 62 33 6556. Fax 03 62 33 3477.

Permit: It is an offence to kill, injure, collect or keep this species unless under permit from the Secretary, Department of Primary Industries, Water and Environment. Cave species are also protected under the *Nature conservation Act* 2002.