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A new troglobitic schizomid from Cape Range, Western Australia (Chelicerata: Schizomida)

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Abstract

The first described Australian schizomid, *Schizomus vinei* sp. nov., is recorded from two caves on Cape Range, Western Australia.

Introduction

The earliest published record of an Australian member of the order Schizomida was an anonymous note published in 1963 recording Dr T.E. Woodward's 1952 exhibition of a schizomid collected from south-eastern Queensland (Anon. 1963). The next paper was by Main (1980) who noted the presence of an undescribed species from Cape Range, Western Australia. Since that time, many additional Australian representatives of the order have accumulated in museum collections and at least a dozen species await description. Most are found in tropical or sub-tropical regions of the Northern Territory and eastern Queensland ranging as far south as Brisbane. The sole exception is the Cape Range species which is the only known cavernicolous species to be recorded to date in Australia.

Due to its extremely localised distribution in only two caves on the Cape Range, this species is threatened by human activities such as pollution (Vine *et al.* 1988). Although a complete revision of the Australian schizomid fauna is desirable, a description of the Cape Range species is presented here to facilitate ecological and conservation work.

Materials and methods

The specimens examined in this study are lodged in the Western Australian Museum (WAM) and the Museum of Victoria (NMV). Methods follow Reddell and Cokendolpher (1984), except for the examination of the spermathecae which were cleared in lactic acid. Body length was measured from the anterior margin of the carapace to the posterior margin of tergite XII. Where measurements are expressed as a fraction, the numerator refers to the length of the structure and the denominator refers to its width.

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Systematics

Family Schizomidae Hansen and Sörensen

Genus *Schizomus*, Cook

***Schizomus vinei* sp. nov.**

Figures 1-9

Holotype

Male, Shot Pot Cave, C 106, Cape Range, Western Australia, 30 May 1983, M. Newton and B. Alden (WAM 87/987).

Paratypes

Western Australia, Cape Range

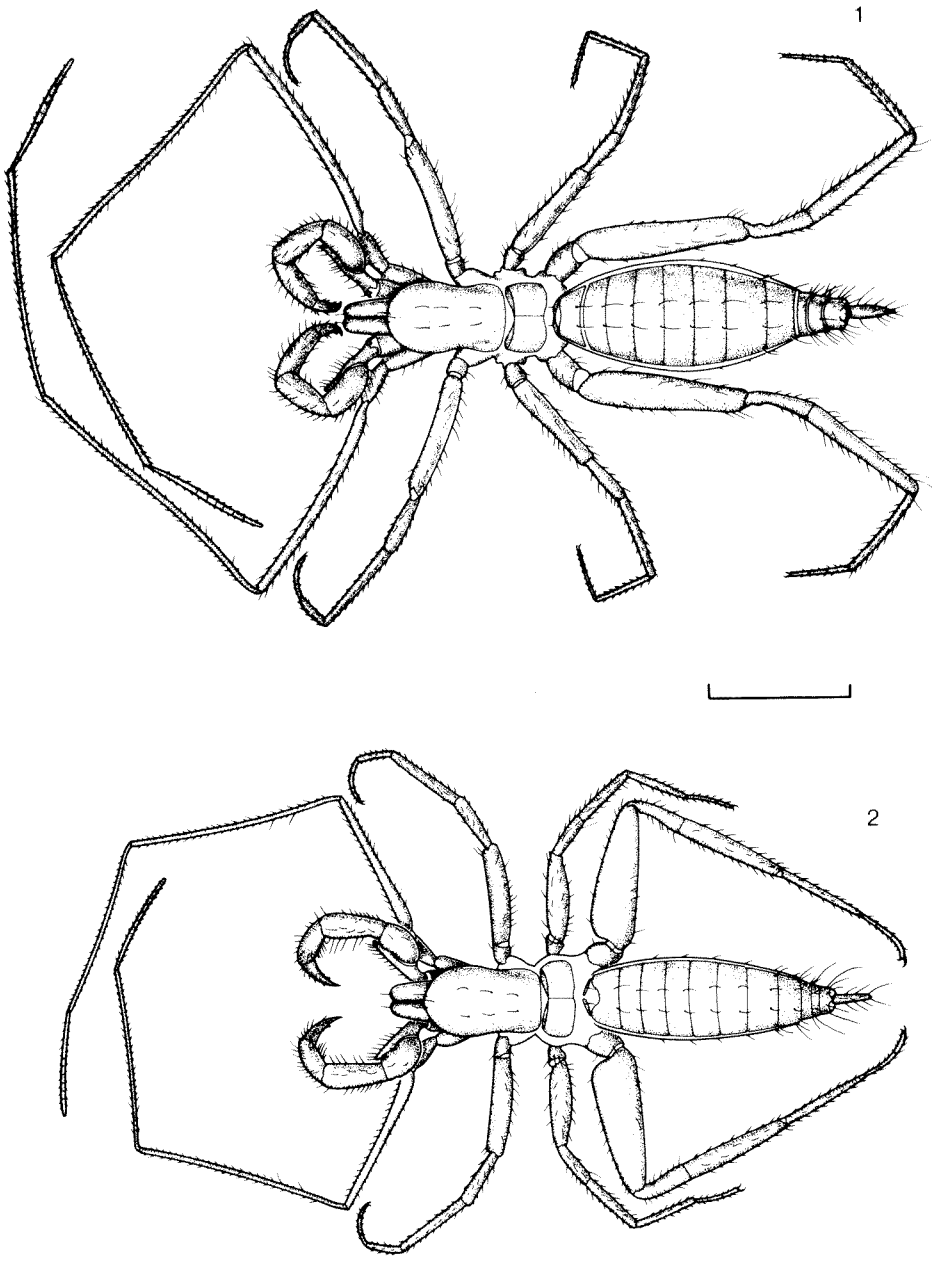
1 male, same collection data as holotype (WAM 87/988). 3 females, 14 juveniles, Shot Pot Cave, C 106, 21 September 1983, J. Lowry (WAM 84/182-188, 85/1229-1238). 2 females, 1 juvenile (without abdomen), Dry Swallet Cave, C 18, 20 May 1983, B. Vine, M. Griffiths, A. Vine, B. Knott (1 female in NMV K746, remainder in WAM 87/989-990). 1 juvenile, "Spiral Cave", August 1962, P. Cawthorn (WAM 87/991).

Diagnosis

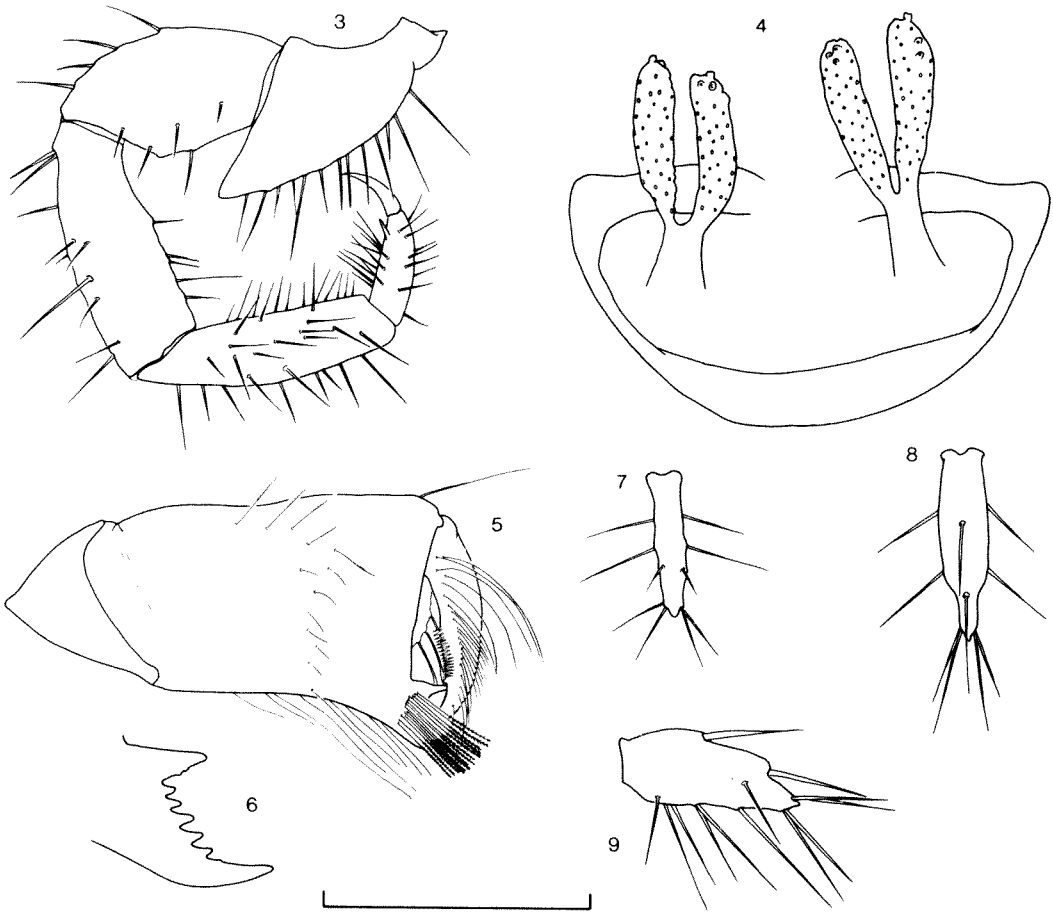
Eye spots absent. Three pairs of dorsal carapaceal setae. Male flagellum laterally compressed. Female spermathecae with paired bifid tubules with distal pustules.

Description

Adults: colour yellow-brown. Carapace (Figures 1-2) with nine setae, two on anterior margin one just posterior to these, remainder on dorsum; anterior margin drawn to a sharply downturned point between chelicerae; eye spots absent. Mesopeltidia broadly separated. Metapeltidia divided. Anterior sternum with 13-15 setae, two of these long and anteriorly directed; posterior sternum triangular, with 6-8 setae. Chaetotaxy of tergites I-IX: 2:2:2:2:2:2:2:4:4. Flagellum of male (Figures 8-9) laterally compressed, 3.53-3.60 times longer than broad. Flagellum of female (Figure 7) three segmented, first segment slightly longer than second, third longest, in some specimens they appear totally fused. Spermathecae (Figure 4) consisting of a pair of bifid anteriorly directed tubules; distally with 2-4 pustules, shafts evenly covered with small pores. Pedipalp (Figure 3): without sexual dimorphism; trochanter with sharply produced distal extension, ventral margin with stout setae, without mesal spur; tibia and tarsus lacking spines, claw 0.63 (♂) 0.54-0.69 (♀) length of tarsus. Chelicera (Figures 5-6): fixed finger with two large teeth plus five smaller teeth between these, basal tooth with 1-2 small, blunt, lateral teeth, distal tooth with a small, blunt, lateral tooth; brush at base of fixed finger composed of 14 setae, each densely pilose in distal half; lateral surface with three large lanceolate, terminally pilose setae; moveable finger file composed of 22 long lamellae, blunt guard tooth present subdistally. Legs: tarsus of leg I seven segmented, even though individual legs occasionally possess only six segments; femur IV 3.99-4.14 (♂) 3.48-3.64 (♀) times longer than wide.



Figures 1-2 *Schizomus vinei* sp. nov. 1. Holotype male, dorsal. 2. Paratype female, WAM 87/989, dorsal. Scale line = 2.00 mm.



Figures 3-9 *Schizomus vinei* sp. nov. 3. Left pedipalp, lateral, holotype male. 4. Genitalia, ventral, paratype female, WAM 84/182, 5. Chelicera, lateral, paratype female, NMV K746. 6. Detail of fixed cheliceral finger, paratype female, NMV K746. 7. Flagellum, dorsal, paratype female, WAM 87/989. 8. Flagellum, dorsal, holotype male. 9. Flagellum, lateral, holotype male. Scale line = 1.00 mm (Figures 3, 7-9), 0.40 mm (Figures 4,6), 0.80 mm (Figure 5).

Dimensions (mm) male (female): body length 6.20-6.43 (5.12-6.49); pedipalp: trochanter 0.96-0.99 (0.96-1.33), femur 1.03-1.08 (0.90-1.20), patella 1.02 (0.90-1.29), tibia 0.91-0.96 (0.87-1.18), tarsus 0.48 (0.44-0.57), claw 0.30 (0.27-0.33), total, excluding claw 4.45-4.48 (4.07-5.57); carapace 1.74-1.89/1.02-1.10 (1.66-2.07/0.96-1.20); leg I: trochanter 0.75-0.84 (0.66-0.84), femur 2.83-3.01 (2.18-2.83), patella 3.49-3.86 (2.87-3.49), tibia 2.67-2.89 (2.51-2.83), basitarsus 0.75-0.78 (0.66-0.71), tarsus 0.98-1.07 (0.73-0.93), total 11.69-12.23 (9.75-

11.63); leg II: trochanter 0.38-0.45 (0.36-0.48), femur 1.76-1.83 (1.59-1.92), patella 0.93-1.02 (0.82-1.02), tibia 1.35-1.47 (1.17-1.58), basitarsus 0.98-1.05 (0.87-1.02), tarsus 0.67-0.72 (0.63-0.75), total 6.07-6.57 (5.44-6.76); leg III: trochanter 0.42-0.54 (0.39-0.48), femur 1.65 (1.35-1.77), patella 0.77-0.79 (0.65-0.78), tibia 1.11-1.26 (0.99-1.32), basitarsus 1.05-1.11 (0.92-1.17), tarsus 0.75-0.76 (0.69-0.81), total 5.88-6.09 (5.01-6.11); leg IV: trochanter 0.60-0.63, femur 2.61-2.67/0.63-0.67 (2.19-2.70/0.63-0.75), patella 1.05 (0.84-1.02), tibia 1.86-2.01 (1.59-2.04), basitarsus 1.73-1.74 (1.38-1.55), tarsus 0.93-0.95 (0.78-0.96), total 8.81-9.02 (7.34-8.76); flagellum 0.67-0.72/0.19-0.20 (0.54-0.59).

Etymology

Schizomus vinei is named for Brian Vine, who has studied the biology of this species (Vine *et al.* 1988).

Remarks

This species is a good member of the genus *Schizomus* and possesses none of the characteristics of the recently diagnosed genus *Trithyreus* Kraepelin (Rowland and Cokendolpher 1984) which has been confused with *Schizomus* for nearly a century.

Main (1981) considers the Australian schizomid fauna to be part of an "Old Northern element". Presumably the group entered Australia once the Australasian land-mass drifted close enough to Asia to permit faunal exchange by island-hopping. The affinities of *S. vinei* can be assessed only after a full appraisal of the remaining undescribed Australian fauna, as well as the Asian fauna. Unfortunately, the female genitalia of the described Asian species have rarely been examined and figured by authors. The spermathecae of *S. vinei* resemble those of three east Asian species including *S. sauteri* Kraepelin, and further resemble one of these, an undescribed species from Taiwan, in possessing distal pustules (J.C. Cockendolpher, pers. comm.). Although the male of the undescribed species is currently unknown, males of *S. vinei* differ from those of the other two species by the shape of the flagellum.

Although this species does not possess extremely attenuate appendages and pale colouration, it appears that it is a facultative troglobite. As discussed in more detail by Vine *et al.* (1988), *S. vinei* has only been authentically recorded from two of the many caves in Cape Range. The true locality of the specimen from "Spiral Cave" listed above (WAM 87/991) is unknown, although it was presumably taken from Shot Pot Cave or Dry Swallet Cave.

recorded

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