

Neobisium (Ommatoblothrus) schawalleri sp. nov., a new troglobitic pseudoscorpion from Crete (Arachnida: Pseudoscorpiones: Neobisiidae)

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Abstract. *Neobisium (Ommatoblothrus) schawalleri* sp. nov., a new troglobitic pseudoscorpion from Crete, is described and compared to related species.

Samenvatting. *Neobisium (Ommatoblothrus) schawalleri* sp. nov., een nieuwe troglobionte pseudoschorpioen uit Kreta (Arachnida: Pseudoscorpiones: Neobisiidae)

Neobisium (Ommatoblothrus) schawalleri sp. nov., een nieuwe troglobionte pseudoschorpioen uit Kreta, wordt beschreven en vergeleken met de verwante soorten.

Résumé. *Neobisium (Ommatoblothrus) schawalleri* sp. nov., une espèce nouvelle de pseudoscorpion troglobie de l'île de Crète (Arachnida: Pseudoscorpiones: Neobisiidae)

Neobisium (Ommatoblothrus) schawalleri sp. nov., une nouvelle espèce de pseudoscorpion troglobie de l'île de Crète, est décrite et comparée aux espèces voisines connues.

Zusammenfassung. *Neobisium (Ommatoblothrus) schawalleri* sp. nov., eine neue Pseudoscorpion von der Insel Kreta (Arachnida: Pseudoscorpiones: Neobisiidae)

Neobisium (Ommatoblothrus) schawalleri sp. nov., eine neue Pseudoscorpion von der Insel Kreta, wird beschrieben und mit den anverwandten Arten verglichen.

Key words: Pseudoscorpiones – *Neobisium (Ommatoblothrus) schawalleri* – new species – Crete – Greece.

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Introduction

On 26th March 1997 Gijs Verkerk and the author visited the Doxa limestone cave (Doxa Spilia, Marathos) near Iraklion. Detritus was sieved and stones turned over in different locations within the cave to perform a profound examination. Near the end of the cave, under a small piece of rock, a single specimen of a remarkable troglobitic *Neobisium* sp. was found.

This relatively large, female pseudoscorpion showed advanced adaptations to cave life: reduced eyes, partial depigmentation and strong elongation of the legs and pedipalps. Cave dwelling *Neobisium* spp. on Crete usually show little or no morphologic adaptations to cave life and they are often found near the cave entrance. On the contrary, more *Chthonius* sp. with pronounced adaptations to cave life were described from Crete (Henderickx 1997).

Our *Neobisium* female was not the first specimen of this species to be found in the Doxa cave. On 10.II.1981 and 13.II.1981 P. R. Deeleman collected two females of obviously the same species. These specimens were studied by Wolfgang Schawaller (1985) who considered them as *Neobisium (Blothrus) odysseum* (Beier 1929) (type locality Corfu). He noticed the differences in the shape of the pedipalp. The specimens from the Doxa cave differ from the holotype of *N. (B.) odysseum* and two *Blothrus* spp. related to the latter (*N. (B.) brevipes* (J. Frivaldski, 1856) (type locality Hungary) and *N. (B.) reimoseri* (Beier, 1929) (type locality Yugoslavia).

Since four (reduced) eyes were found to be present on the Doxa specimen, the species should be placed in the subgenus *Ommatoblothrus* Beier, 1965. The latter subgenus might however turn out to be synonymous with *Blothrus* Schiödte, 1888 since degeneration of eyes sometimes varies. The species was compared to *Neobisium (Ommatoblothrus)* species (see Differential diagnosis) and appears to be closely related but different from all members of this subgenus.

Morphological characteristics distinguish the Doxa specimen from all examined *Neobisium* species and therefore the status of new species is given.

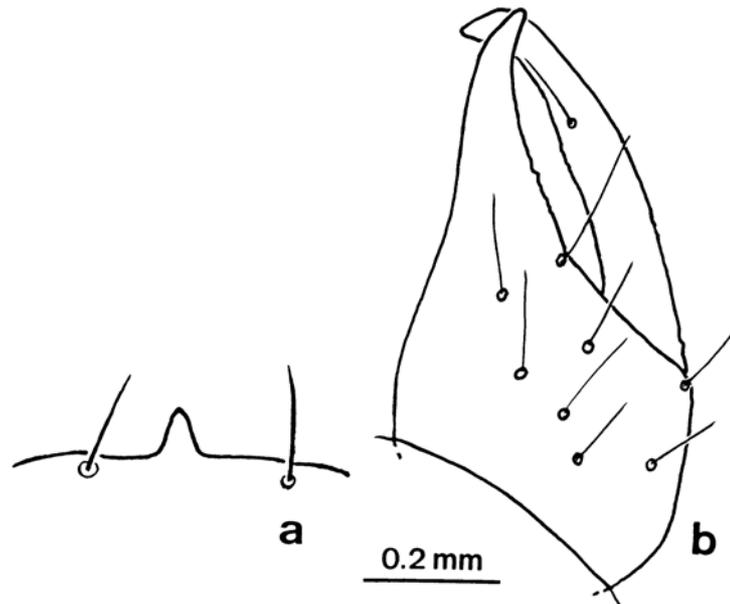


Fig. 1a: *Neobisium (O.) schawalleri* sp. nov., holotype, epistome, 1b: right chelicera.

***Neobisium (Ommatoblothrus) schawalleri* sp. nov.**

Holotype ♀, Crete, Maratos, Doxa cave, 26.III.1997, leg. H. Henderickx and G. Verkerk. Deposited in the Naturhistorisches Museum Wien. Paratypes: 2♀, Crete, Maratos, Doxa cave, coll. Deeleman, 10.II.1981 and 13.II.1981, in the Staatliches Museum für Naturkunde (Museum am Löwentor), Stuttgart.

♂ unknown.

Description of ♀ holotype (all measurements in mm, index is length/width).

Total length (excluding chelicerae) 3.91 mm.

Opisthosoma clear brownish-yellowish, poorly pigmented, carapax and pedipalps darker reddish brown, sclerotised.

Carapace (excluding epistome) (1.09 × 0.91 mm), glossy, with 22 setae, 6 on the posterior margin. Setal formula 4,6,6,6. Epistome long and pointed (Fig. 1a). Two pairs of reduced eyes, only the first pair with flat lenses, the second pair reduced to whitish spots.

Abdomen of usual *Neobisium* facies, pale. Tergal chaetotaxy 6, 8, 8, 10, 10, 10, 10, 10+2, 10+2, 6, terminal segment with 12 setae.

Chelicerae (Fig 1b) with 8 setae on the hand. Movable finger with 1 seta, small rudimentary teeth (serration) on a slight elevation, no median large tooth. Galea flat. Pedipalps (Fig. 2) slender and elongated; coxa: Fig. 3.; trochanter (0.78 × 0.72 mm),

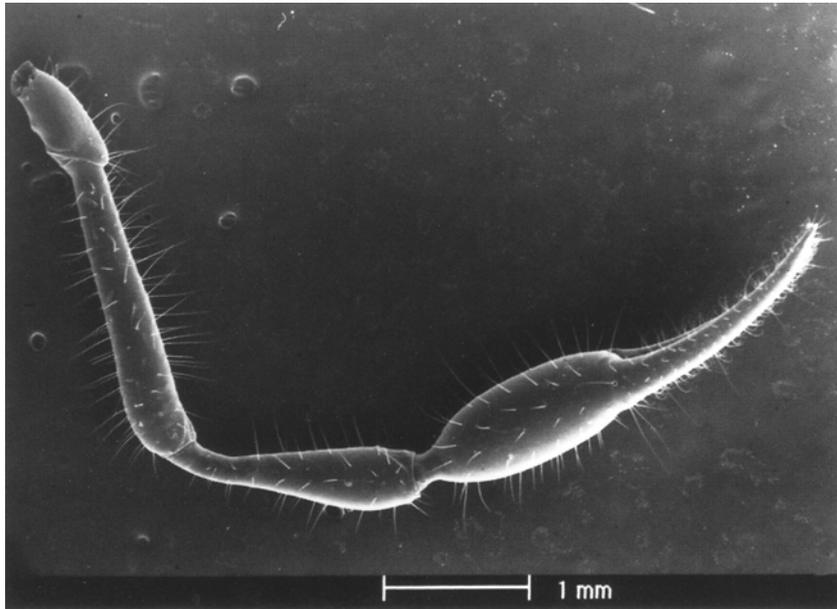


Fig. 2: *Neobisium (O.) schawalleri* sp. nov., holotype, right pedipalp.

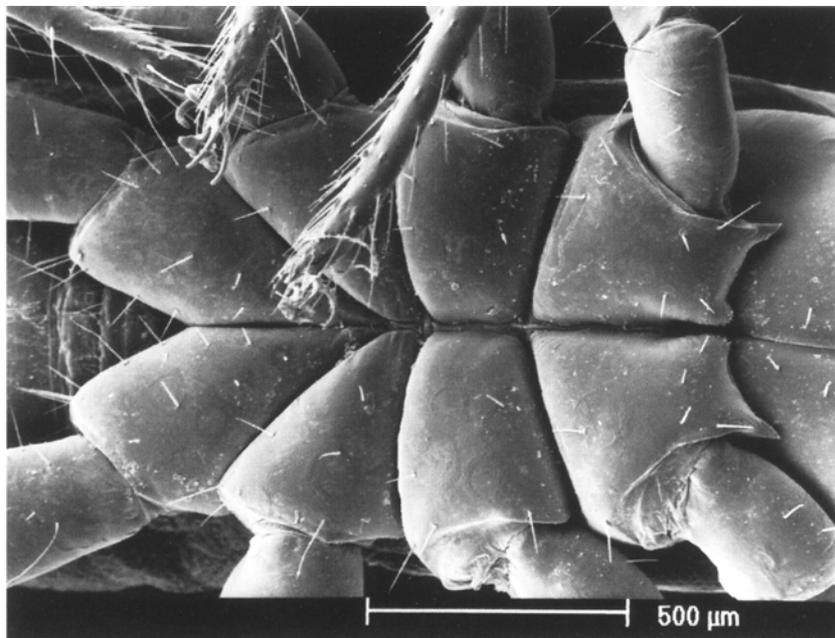


Fig. 3: *Neobisium (O.) schawalleri* sp. nov., holotype, coxa.

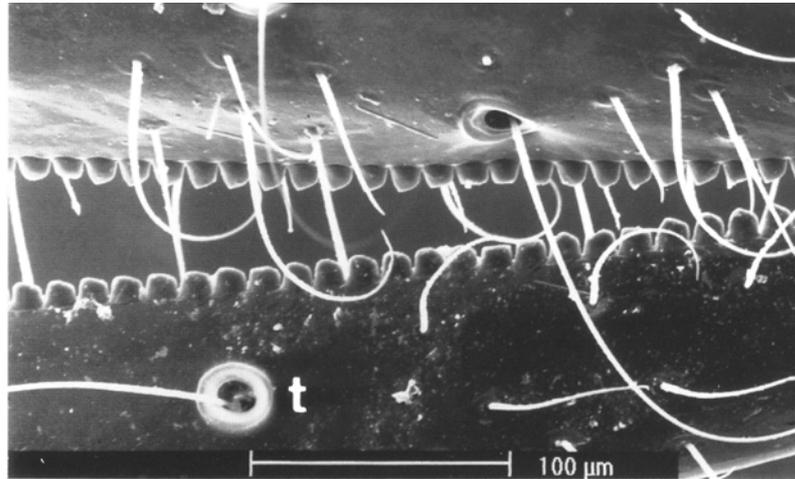


Fig. 4: *Neobisium (O.) schawalleri* sp. nov., holotype, dentation of the pedipalp in the area of trichobotrion 't'.

index 1.08; femur (1.85×0.32 mm, index 5.78) conical shaped, index 5.78 and $1.21 \times$ larger than tibia. Tibia (1.52×0.39 mm, index 3.89). Length of hand + fixed finger: 3.12 mm, hand without finger (1.37×0.57 mm), index 2.40. Fixed finger (1.75×0.23 mm) $0.96 \times$ the length of the movable finger, with 142 teeth. Movable finger (1.82×0.14 mm), index 13, with 117 teeth. Both fingers with terminal claw. Small teeth on both fingers, short and blunt. Fig. 4 shows the dentation in the terminal area, trichobotrion **t** is indicated. Trichobotrion **ist** on the fixed finger is placed distally, $1.3 \times$ more separated from **ib** than from the fingertip (Fig. 5).

Leg IV: coxa: L=0.52 mm; trochanter IV: L=0.55 mm; femur (basifemur L=0.65 mm + telofemur L=0.84 mm) = 1.49×0.34 mm, index 4.38; tibia L=1.36 mm; metatarsus L=0.60 mm; telotarsus L=0.76 mm.

Differential diagnosis

The new species differs from *Neobisium (Blothrus) odysseum* and to the latter allied species of this subgenus (*N. (B.) brevipes* and *N. (B.) reimoseri*) in the presence of reduced eyes, the shape of the pedipalp and the dentation and chaetotaxy of the celicera. The typical epistome is longer than that of *N. (B.) odysseum*. Other Greek *Blothrus* spp. (*N. (B.) princeps* Curcic, 1974 and *N. (B.) casalei* Gardini, 1985) have a very different type of pedipalp.

Helversen & Martens (1972) state that specimens designated as *N. (B.) creticum* (Beier, 1931), *N. (B.) stygium* Beier, 1931 and *N. (B.) torrei* (E. Simon, 1881) = *N. (B.) roeweri* Beier, 1932, were erroneously mentioned from Crete by Roewer and have in fact a range in mid-eastern Europe.

The presence of eyes, the shape of the pedipalp and the celicera place the new species close to some species of the subgenus *Ommatoblothrus*.

Beyer (1963) separates two groups in this subgenus: one with a wide blunt tooth on the subdistal side of the cheliceral finger and 4 setae on the rear row of the carapace, the other group with a serrated thin elevation on the distal half of the movable cheliceral finger and 6-8 setae on the rear row of the carapace.

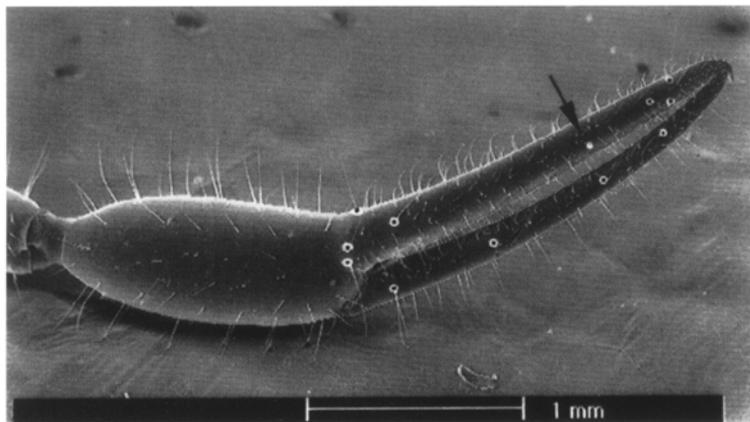


Fig. 5: *Neobisium (O.) schawalleri* sp. nov., holotype, lateral view of hand of right pedipalp with indication of trichobotria.

The later described *N. (O.) phaeacum* Mahnert, 1973 (type locality Corfu) with 4 setae on the rear row of the carapace and the blunt tooth on the celicera should be added to the first group.

The new species obviously belongs to the second group, with *N. (O.) staudacheri* Hadzi, 1933 (type locality Dalmatia), *N. (O.) cerrutii* Beier, 1955 (type locality Italy) and *N. (O.) sardoum* Beier, 1956 (type locality Sardinia). The later described *N. (O.) pangaeum* Gardini, 1985 (type locality Macedonia) can be added to this group.

The shape of the pedipalp resembles that of *Neobisium (O.) pangaeum*. There is however a difference in the dentation of the fingers. The new species has 142 teeth on the fixed and 117 on the movable finger. *N. (O.) pangaeum* 93 and 90. *N. (O.) pangaeum* has 6 setae on the celicera, the new species 8.

The major differences with *N. (O.) staudacheri* are the number of setae on the posterior margin of the carapace (*N. (O.) staudacheri* has 8 setae, the new species 6) and the shape of the epistome (small triangular in *N. (O.) staudacheri*, long and pointed in the new species). *N. (O.) staudacheri* has less teeth on the fingers: 88 on the fixed, 78 on the movable finger (the new species 142 and 117). Trichobotrion **ist** is placed distally, 1.3× further separated from **ib** than from the fingertip. In *N. (O.) staudacheri* **ist** is placed in the middle between **ib** and the fingertip.

The chaetotaxy of the celicera (8 setae) differs in *N. (O.) cerrutii* (7 setae). The epistome of *N. (O.) cerrutii* is very broad (long and pointed in the new species). The tergal chaetotaxy (6, 8, 8, 10, 10, 10, 10, 10+2, 10+2, 6) differs from *N. (O.) cerrutii* (5, 6, 6, 7, 7, 8, 7, 7, ...).

The new species differs in the shape of the pedipalp (femur index 5.78) from *N. (O.) sardoum* (femur index 7.4). *N. (O.) sardoum* has a broad epistome. The reduction of eyes (first pair with flat lenses, second pair only spots) differs from *N. (O.) sardoum* (4 eyes with lenses).

Biology and ecology

The presence of specialised *Neobisium* species on the Greek islands is rare, and the populations are isolated from the *Neobisium* species from Hungary, Romania, Yugoslavia and the Greek mainland. Maybe transportation on bats has once been a factor here. The

newly described species from Crete was still capable to live outside the cave for at least a day without dehydration. Many troglobitics die rapidly in an epigeic environment.

The type specimen was found at the end of the cave, a place preferred by bats to hibernate. During the search a *Pholcus* sp. (*Pholcidae*, *Aranea*) and a *Diplocephalus* sp. (*Linyphiidae*, *Aranea*) were found in the Doxa cave. The *Diplocephalus* sp. is probably troglophilous, and the presence of a small but ancient ecosystem in this cave is likely.

Distribution

The species is only known from the type locality (Doxa cave, Marathos, Crete).

Etymology

The species is dedicated to Wolfgang Schawaller, who examined and lent the Deeleman specimens (now paratypes), to honour his contributions to the knowledge of pseudoscorpions.

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