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The first record of pseudoscorpions in honeybee hives in Turkey

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Abstract: Three pseudoscorpions identified as *Neobisium validum* were found in a honeybee hive in Bursa Province of Turkey. They were collected from the bottom of the hive but no relationship between the pseudoscorpions and bees was observed. This case is a first report of pseudoscorpions in a honeybee hive from Turkey.

Key words: Pseudoscorpions, honeybee, hive, Turkey

1. Introduction

Pseudoscorpions are arthropods belonging to the order Pseudoscorpiones, 1 of 10 orders within the class Arachnida. Although their body form resembles that of true scorpions, they lack a stinging tail and pectines, and their adult body length is less than 1 cm (1). Pseudoscorpions generally live in soil, in leaf litter, under logs, or under bark of trees, and they prey on small arthropods such as insects (including adults, larvae, and eggs) and mites (2). To facilitate transport to new locations, some species occasionally attach themselves to various insects, including Coleoptera, Diptera, Hymenoptera, Lepidoptera, and Orthoptera (3,4).

We here report on the occurrence of 3 pseudoscorpions found in bee hives in Bursa Province in northwestern Turkey. These represent the first records of pseudoscorpions in Turkish bee hives.

2. Case history

Three pseudoscorpion specimens were found in a honeybee (*Apis mellifera* Linnaeus, 1758) hive in Bursa Province of Turkey, 40°23'N, 28°87'E (Figure 1), during November 2010. The apiary was located near a mix of bushes and short trees and consists of 20 well-managed hives. Temperatures in winter can sometimes fall below freezing, and the region is always quite humid (73% average) due to the Marmara Sea (5). The average temperature range in November is 5.6–15.9 °C in Bursa Province; at the time of the reported findings, it was approximately 15 °C and sunny.

The specimens were collected from the bottom of the hive and, at the time, no relationship was observed between the pseudoscorpions and the bees. All surfaces of the hive and the combs were then inspected for the possible existence of any other pseudoscorpions, but no further specimens were located.

The specimens, which are lodged in the Western Australian Museum, Perth (WAM), were preserved in 70% ethanol and examined with a Leica MZ16A dissecting microscope and a Leica DM2500 compound microscope.

3. Results and discussion

The 3 specimens were identified as *Neobisium validum* (Figure 2) based on the descriptions and illustrations provided by Beier (6,7) and Dashdamirov and Schawaller (8,9). They were all light brown and the length of their bodies varied between 2.9 and 3.1 mm. *Neobisium validum* was originally described under the name *Obisium validum* from Syria (10) and has since been recorded from various other regions of southeastern Europe, the Middle East, the Caucasus, Iran, and southern Turkmenistan (11). It has been described under a variety of names, including the junior synonyms *Obisium* (O.) *caucasicum* Beier, 1928; *Neobisium* (N.) *turcicum* Beier, 1949; *Neobisium baniskhevii* Kobakhidze, 1960; and *Neobisium zhiltzovae* Curcic, 1984 (6,12–14).

There are 16 species of *Neobisium* recorded from Turkey and *N. validum* is widely distributed throughout Turkey. The Turkish locations have been summarized by

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Figure 1. Location of Bursa Province within Turkey.



Figure 2. Dorsal view of *Neobisium validum* from Bursa Province, Turkey.

Kunt et al. (15), and it has been previously recorded from Bursa Province (7,16,17).

Pseudoscorpions have been frequently associated with honeybee hives, especially in Europe (3,18), but the only recent published record for Europe is *Ellingsenius fulleri* (family Cheliferidae) from Cyprus and Spain (19). This species has probably been inadvertently introduced to Europe via human agency (19).

The Turkish specimens of *N. validum* recorded here represent the first occurrence of specimens of the family Neobisiidae in honeybee hives, but an association

between the pseudoscorpions and honeybees seems doubtful. There is a probability of parasitism between bees and pseudoscorpions in the future, because of the intersection of their habitats. It is more probable that the pseudoscorpions entered the hives from the substrate on which the hives were resting, as *Neobisium* pseudoscorpions are frequently found in leaf litter and soil. However, its potential economic risks on beekeeping can be considered and beekeepers and scientists should pay attention to this arthropod.

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