

First record of *Sclerodermus* Latreille, 1809 (Hymenoptera: Bethyridae) and report of the first case of human stings in Slovakia

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Abstract

The first stings by a *Sclerodermus* species in humans is reported from Slovakia, where this genus has been overlooked for a long time. It is probable that individuals of this species arrived into the house in untreated piece of wood, where they parasitised wood-boring insects.

Key words: ant-like insects, painful and extremely itchy stings, Middle Europe

Introduction

The genus *Sclerodermus* belongs to parasitoid wasps of family Bethyridae (Hymenoptera). In Europe, 23 species occur sporadically (Polaszek 2022). No species of this genus has been formally recorded in Slovakia until now (see Macek et al. 2007; Polaszek 2022).

These small- to medium-sized, frequently dark-coloured wasps are commonly known as “flat wasps” (Azevedo et al. 2018; Colombo et al. 2020; Brewer-Carías et al. 2020). The females of many bethyrids are ant-like in appearance, frequently apterous, but some species are polymorphic, and females could be both apterous and macropterous (e.g., Colombo & Azevedo 2020; Brewer-Carías et al. 2020). Flat wasps parasitise larvae of Lepidoptera and Coleoptera. For example, bethyrid species tend to attack microlepidopteran families, such as the Gelechiidae, Noctuidae and Tortricidae, whereas there are many reports that epyrine and pristocerine species mainly attack coleopteran families, such as the Anobiidae, Bostrychidae, Buprestidae, Cerambycidae and Tenebrionidae (Gordh & Móczár 1990). Few species have been reported to sting humans, causing slight to severe pain and allergic reactions to those who suffered the wasp attack (Oda et al. 1981; Viglizzo et al. 2002; Veraldi et al. 2010; Papini 2014; Almeida et al. 2017; Skvarla 2018; Simon et al. 2020; Brewer-Carías et al. 2020). In Europe, most cases are reported from Italy and Spain. All cases were associated with (direct or indirect) handling of wood (Veraldi et al. 2010; Papini 2014).

The knowledge about the clinical picture of *Sclerodermus* human stings and the presence of this genus in Slovakia has not been published yet.

Material examined

Slovakia, Košice, 16.1.2022: 4♀ (Laboratory and Museum of Evolutionary Ecology, University of Prešov) (Figure 1). Notes: Small wasps, larger than 3.0 mm. Body slender and flattened. Fully described in Azevedo et al. (2018). *Sclerodermus* (apterous females) was recorded in the

house (a family house) close to the terrarium containing leopard gecko *Eublepharis macularius* (Blyth 1854) (Eublepharidae). In the summer, a piece of wood from the forest around Košice city (48°42'11"N, 21°17'25"E) was placed in the terrarium (Figure 2).

First record of human stings in Slovakia – case description

Individuals of *Sclerodermus* were registered and collected for the first time after stinging a person living in the household. The first, but not clarified, sting appeared 13 January 2022 on the left forearm of the keeper, apparently due to accidental squeeze of the insect during manipulation of the terrarium equipment. Because of the small size of the causative agent, it was overlooked. It was unexpectedly painful and extremely itchy. After few days, moving insects were observed in terrarium. They were crawling on the sand substrate and on the geckoes, also. The gecko was probably stung (a small swelling in the head area and scratching was observed). During the following night, more bites occurred on the keeper, who slept near the terrarium. Five intense pruritic lesions suggestive of insect bites were localised on the left arm. Insects that were smaller than gaps in terrarium aeration system had escaped to adjacent furniture and invaded the room. The “corpus delicti” was found next day when the keeper noticed small wasps on her nightwear, with other two bites to the breasts and one in abdomen located. The stings produced itchy papular lesions (Figure 3) similar to those reported for *S. domesticus* (e.g., Serini et al. 2010; Veraldi et al. 2010; Viglizzo et al. 2002). These were healed with topical corticosteroid creams such as Triamcinolonacetonid and Betamethason. For the first three days, they were combined with oral antihistaminic treatment (Desloratadin tbl.), due to vehement pruritus and pain. The topical therapy lasted for 10 days.

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Figure 1. *Sclerodermus* female specimen from the stung person.



Figure 2. A terrarium and a piece of wood that is most likely the source of the pest.



Figure 3. Papular lesions caused by *Sclerodermus* stings.

Conclusions

The genus *Sclerodermus* has been overlooked in Slovakia for a long time. The fact that the first discovery is published only now is probably due to the lack of experts who would deal with this group in Slovakia. Although we publish the first documented case of human stings, rare stings may have occurred in the past. However, stung people and certainly medical doctors cannot identify the origin of the stings. Even if individuals are observed or caught, misidentification probably occurs due to the small size and similarity with ants. A person can most often come into contact with wasps in everyday life, e.g. untreated old or antique furniture (e.g. in Italy, Spain, etc. there have been several cases of dermatitis associated with these wasps (Veraldi et al. 2010; Papini 2014)), but also wooden panelling, floors, ceilings, beams in old houses. A high-risk group, in addition to the general public, is e.g. restorers working with wood, carpenters, antique dealers, etc. Stings were unexpectedly painful and extremely itchy. The source of contamination was identified in a worm-eaten piece of wood from the forest placed in a terrarium. Although the first documented case of human stings

is published here, bites may have occurred in the past, albeit rarely. Physicians, dermatologists, medical staff, and public health entomologists, as well as specific categories of workers, should be made aware of the risk of exposure to *Sclerodermus* stings.

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