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Parasteatoda tabulata (Levi, 1980), a new cobweb spider species in the Hungarian fauna (Araneae: Theridiidae)

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Abstract – *Parasteatoda tabulata* (Levi, 1980) (Araneae: Theridiidae), a cobweb spider species of Asian origin, is reported for the first time from Hungary. Specimens were collected in and around the outdoor area of a garden centre in Budapest. Photographs of the copulatory organs and the habitus of voucher specimens from Hungary are provided.

Key words – introduced species, distribution, faunistics, new record

INTRODUCTION

Theridiidae (Araneae), commonly known as cobweb spiders, is one of the largest spider families, including 2596 described species in 133 genera (World Spider Catalog 2025). It is also the most common family among spider species introduced to Europe in the last 200 years (Nentwig 2015). Synanthropic representatives of the family, such as *Parasteatoda tepidariorum* (C. L. Koch, 1841), *Steatoda grossa* (C. L. Koch, 1838), or *Steatoda triangulosa* (Walckenaer, 1802) are common in buildings in Hungary (Szinetár & Kovács 2024). The genus *Parasteatoda* Archer, 1946 is represented in Europe by four species: *Parasteatoda tepidariorum*, *Parasteatoda lunata* (Clerck, 1757), *Parasteatoda simulans* (Thorell, 1875), and *Parasteatoda tabulata* (Levi, 1980) (Nentwig *et al.* 2024).

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To date, no confirmed occurrences of *Parasteatoda tabulata* have been recorded in Hungary, although it is known to occur in several other countries in the Carpathian Basin (Šestáková & Gajdoš 2011, Urák 2005).

MATERIAL AND METHODS

Cobweb spider specimens of the genus *Parasteatoda* were singled from artificial surfaces (walls, pots, benches, etc.) in the open-air sections of a garden centre and its surroundings, located in a suburban area of Budapest, in 2018 and 2024 (see in more detail in Results and discussion). The spiders were transferred to the laboratory of the Department of Entomology, Hungarian University of Agriculture and Life Sciences, Budapest. After confirming their developmental stage, adult individuals (two females) were conserved in 70% ethanol, while one subadult male was kept alive in a plastic container with perforated lid until its final moult. Water and adult fruit flies (*Drosophila* sp., Drosophilidae) were provided for it. The spider specimens were identified according to Nentwig *et al*. (2024) using a Leica MZ6 binocular stereomicroscope. One female voucher specimen is deposited in the Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum, Budapest (catalogue number: HNHM Araneae-13779), while one female and one male in the last author's private collection.

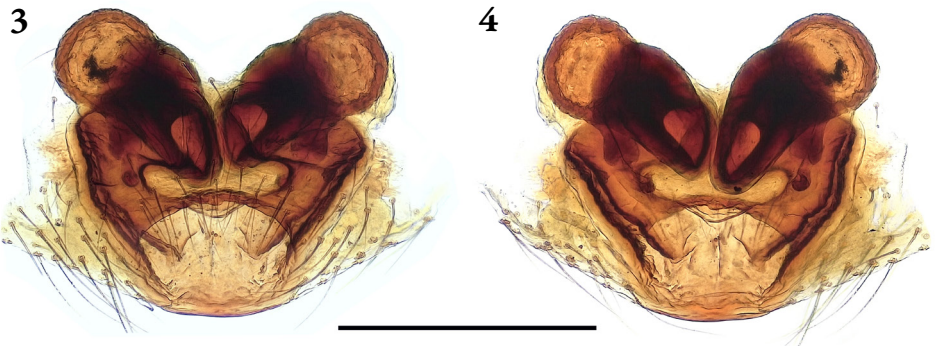
All images are multifocal, and were shot and processed in the Department of Zoology, University of Veterinary Medicine Budapest. Stack images were compiled using Helicon Focus 7.0. The habitus images were captured using a Tucsen MiChrome digital camera attached to a Nikon SMZ1000 stereomicroscope, while palp images were taken by a Tucsen TrueChrome Metrics digital camera on a Nikon Eclipse E200 compound microscope. Specimens were fixed in position in fine grain sand for acquiring the habitus images, and in commercial hand sanitizer for the palp images. The female epigynum was immersed in methyl salicylate to make sclerotised parts more transparent for imaging. GIMP 3.0.4 software was used for the post-processing work of the photographs.

RESULTS AND DISCUSSION

Parasteatoda tabulata (Levi, 1980)
(Figs 1–7)

Material examined – Hungary: Budapest, District II, 47°31'43"N, 18°57'08"E, garden centre, outdoor, 8.VIII.2018, leg. D. Horváth, det. L. Mezőfi, one female; same locality, 23.VII.2024, leg. M. Takács, det. L. Mezőfi, one male (matured in captivity), one female.

Figs 1–2. Habitus of *Parasteatoda tabulata* (Levi, 1980), 1 = female, 2 = male. Scale bar = 1.0 mm (photos by Tamás Szűts)



Figs 3–4. Epigyne/vulva of a *Parasteatoda tabulata* (Levi, 1980) female from Budapest, Hungary, 3 = ventral view, 4 = dorsal view. Scale bar = 0.4 mm (photos by Tamás Szűts)

Figs 5–7. Left palp of a *Parasteatoda tabulata* (Levi, 1980) male from Budapest, Hungary, 5 = prolateral view, 6 = ventral view, 7 = retrolateral view. Scale bar = 1.0 mm (photos by Tamás Szűts)

Remarks – Based on their appearance (Figs 1–2) and the copulatory organs (female in Figs 3–4, male in Figs 5–7), the collected specimens were identified as *Parasteatoda tabulata* (formerly known as *Achaearanea tabulata*). The species is not native to Europe (Nentwig *et al.* 2024); it was first documented on the continent by Moritz *et al.* (1988) in Berlin, Germany. Its presence in Hungary was expected as it had been previously reported from several neighbouring countries: Austria (Knoflach 1991), Romania (Urák 2005), Slovakia (Šestáková & Gajdoš 2011), and Slovenia (Kuralt *et al.* 2024). *Parasteatoda tabulata* can be confused with *Cryptachaea riparia* (Blackwall, 1834) and *Parasteatoda tepidariorum*. Moreover, it often co-occurs with the latter, as supported by the fact that an adult female of *Parasteatoda tepidariorum* was collected together with *Parasteatoda tabulata* specimens in the garden centre. Therefore, correct identification requires expertise and the examination of the copulatory organs. *Parasteatoda tabulata* has probably been present in Hungary for years, however, it may not be widely distributed within the country, as a recent study focusing on the synanthropic spider fauna of the Carpathian Basin (Szinetár *et al.* 2020) did not mention the species in relation to Hungary.

Parasteatoda tabulata is discussed in more detail in Szinetár & Kovács (2024), where it is referred to as a species already at our doorstep; the Hungarian name "bevándorló törpepók" was proposed therein and is adopted in the present work. A recent comprehensive study of non-native insect species recorded in the Carpathian Basin shows that the establishment rate of alien species is still increasing in the 21st century (Haris *et al.* 2025). In accordance with this, many introduced spider species have recently been recorded in Hungary (e.g., Korányi *et al*. 2017, Mezőfi & Markó 2018, Szinetár *et al.* 2024, Szűts 2024). The occurrence of *Parasteatoda tabulata* in a garden centre lends weight to the conclusion of Hänggi & Straub (2015) that such artificial habitats could serve as stepping stones for non-native spiders. In light of the above, further Mediterranean and tropical spider species are expected to appear in Hungary in the near future.

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