

First record of *Philodromus buchari* (Araneae: Philodromidae) in Hungary

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Abstract – *Philodromus buchari* Kubcová, 2004 is reported for the first time from Hungary. A relatively large and abundant population of *Ph. buchari* was found in Diósd (near Budapest), and after examining other materials, it seems that the species is widespread throughout the country. In the past *Ph. buchari* was misidentified as *Ph. aureolus* (Clerck, 1757), *Ph. cespitum* (Walckenaer, 1802) or *Ph. longipalpis* Simon, 1870, and possibly it is a native species in Hungary. It may have a wider distribution in Europe and the Mediterranean region as previously was thought. Copulatory/genital organs and habitus of *Ph. buchari* are illustrated. With 11 figures.

Key words – distribution, faunistics, new record, *Philodromus aureolus* group

INTRODUCTION

Recently many spider species were reported as new to the fauna of Hungary: e.g. *Jacksonella falconeri* (Jackson, 1908) (SZINETÁR *et al.* 2017), *Icius subinermis* Simon, 1937 (KORÁNYI *et al.* 2017), *Cyclosa sierrae* Simon, 1870, *Porrhomma oblitum* (O. P.-Cambridge, 1871) (MEZŐFI & MARKÓ 2018) or *Kryptonesticus eremita* (Simon, 1880) (SZABÓ & SZINETÁR 2018), thus the number of spider species present in Hungary is constantly increasing.

In Europe the *Philodromus aureolus* group comprises 14 closely related species (MUSTER & THALER 2004, NENTWIG *et al.* 2018), but until now only seven of them were found in Hungary, namely *Ph. aureolus* (Clerck, 1757), *Ph. buxi* Simon, 1884, *Ph. cespitum* (Walckenaer, 1802), *Ph. collinus* C. L. Koch, 1835, *Ph. longipalpis* Simon, 1870, *Ph. marmoratus* Kulczyński, 1891 and *Ph. praedatus* O. P.-Cambridge, 1871 (SAMU & SZINETÁR 1999, PFLIEGLER 2014, MEZŐFI & MARKÓ 2018). A further species from the *Ph. aureolus* group is reported hereunder as new to the fauna of Hungary.

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MATERIALS AND METHODS

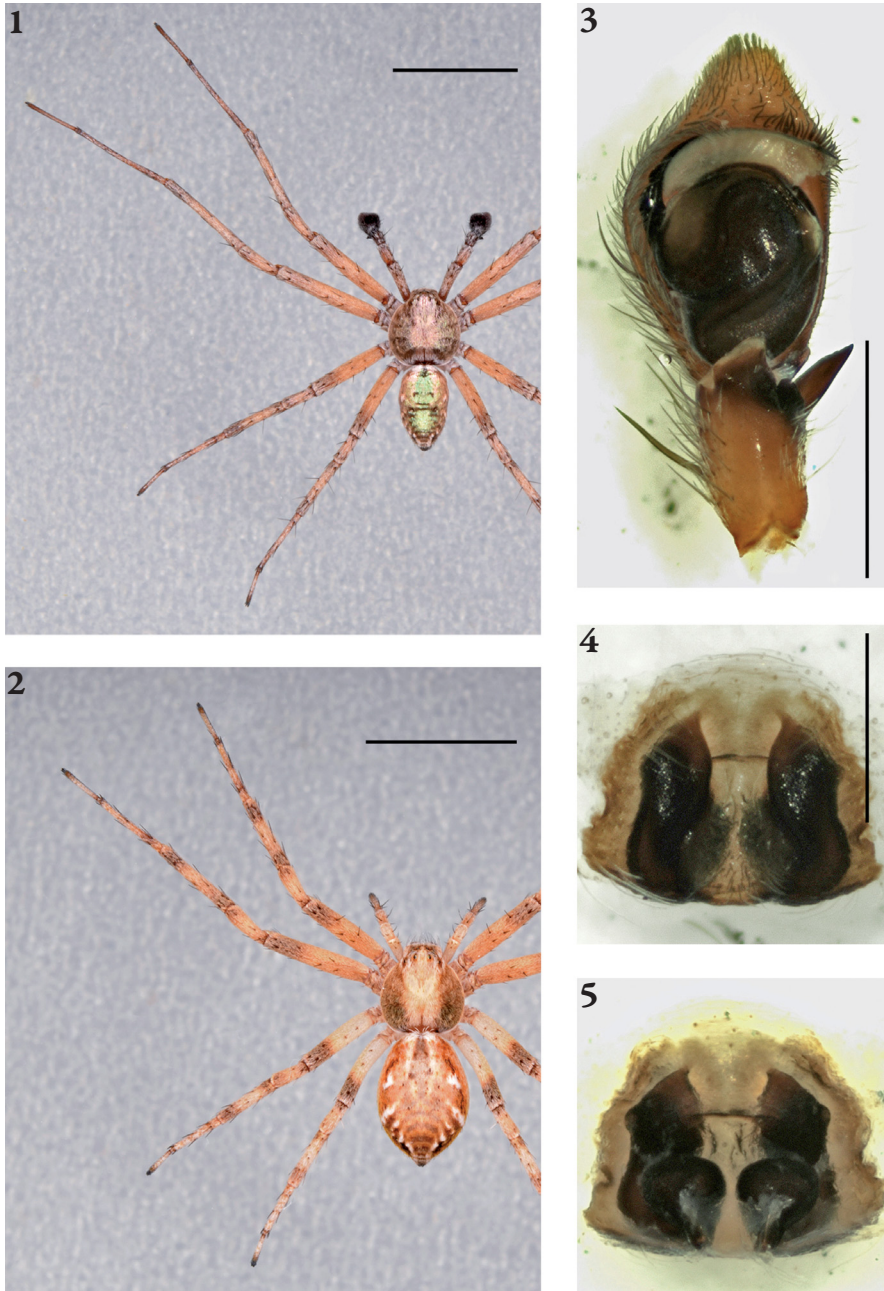
Philodromus buchari specimens were collected at various parts of Hungary from 2016 to 2018 with hand or by beating branches. Exact locations and dates are indicated with some comments in the Results. Juvenile specimens were kept alive and fed with *Drosophila hydei* Sturtevant, 1921, until their final moult. The collected and reared specimens were stored in 70% ethanol. The individuals were examined in the laboratory of the Department of Entomology, Szent István University. Identification was made under binocular stereo microscope (Leica MZ6). The genitalia of adult females were dissected from the bodies, and the epigynes/vulvae were cleared with 20% KOH. The specimens were deposited in the first author's private collection and in the Hungarian Natural History Museum, Budapest. Habitus pictures were taken with a Nikon D3300 camera equipped with a Sigma 50mm 1:2.8 DG Macro lens. Copulatory and genital organs were photographed with a Sony XCD-SX90CR digital interface connected to a Zeiss Stemi 2000 stereomicroscope. The specimens' parameters were measured with an ocular micrometer calibrated with a stage micrometer, and for the post-processing work of the photographs, and for the preparation of the scale bars Adobe Photoshop CS3 software was used. The taxonomic names follow the nomenclature of the WSC (2018).

RESULTS AND DISCUSSION

Philodromus buchari Kubcová, 2004
(Figs 1–8)

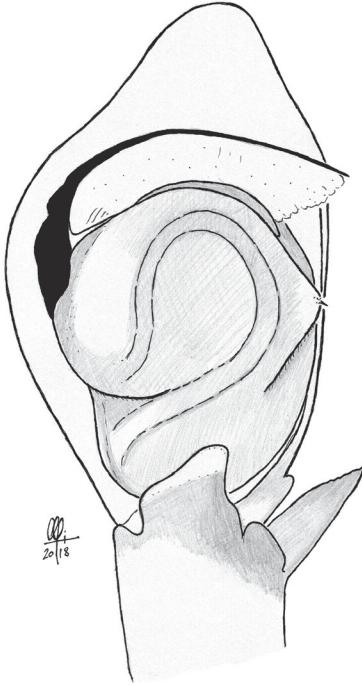
Identification – KUBCOVÁ (2004), MUSTER & THALER (2004).

Material examined – HUNGARY (10 ♂♂, 10 ♀♀). **Pest county:** Budaörs, 47° 27' 43" N, 18° 57' 10" E, 181 m a.s.l., private garden, 1.IV.2016, leg. V. Hoffmann, det. L. Mezőfi (1 ♂, matured in captivity); Diósd, 47° 24' 48" N, 18° 55' 54" E, 188 m a.s.l., private garden, 12.VI.2016, leg. & det. L. Mezőfi (1 ♀, matured in captivity); Diósd, 47° 24' 44" N, 18° 56' 13" E, 177 m a.s.l., forest fringe, 2.IV.2017, leg. L. Mezőfi, det. É. Szita (1 ♀, matured in captivity), 15.IV.2018, leg. & det. L. Mezőfi (8 ♂♂, 5 ♀♀, specimens matured in captivity); Pilisszentkereszt, 47° 42' 29" N, 18° 54' 04" E, 586 m a.s.l., natural forest, 24.III.2018, leg. & det. L. Mezőfi (1 ♀, matured in captivity); Pomáz, 47° 37' 57" N, 19° 00' 59" E, 167 m a.s.l., abandoned pear orchard, 20.V.2016, leg. & det. L. Mezőfi (1 ♂). **Szabolcs-Szatmár-Bereg county:** Újfehértó, 47° 49' 12" N, 21° 39' 57" E, 119 m a.s.l., organic apple orchard, 16.IV.2016, leg. & det. L. Mezőfi (1 ♀, matured in captivity). **Zala county:** Lesenceistvánd, 46° 52' 00" N, 17° 21' 26" E, 140 m a.s.l., on the underbrush in a suburban habitat, 20.V.2018, leg. & det. L. Mezőfi (1 ♀).

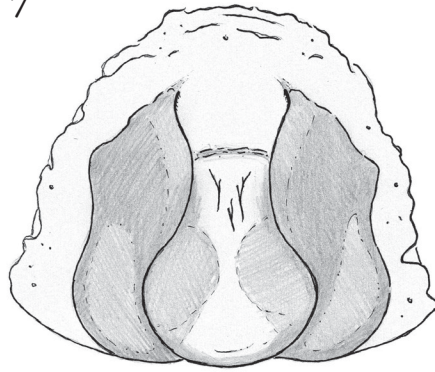


Figs 1–5. *Philodromus buchari* Kubcová, 2004 from Hungary, 1 = male, dorsal view, 2 = female, dorsal view, 3 = male's left palp, ventral view, 4 = epigyne, ventral view, 5 = epigyne/vulva, dorsal view. Scales = 5 mm (Figs 1–2), 1 mm (Fig. 3), 0.5 mm (Figs 4–5)

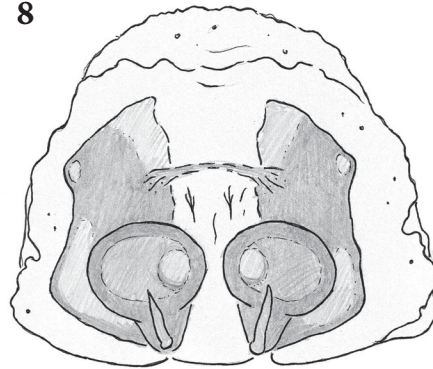
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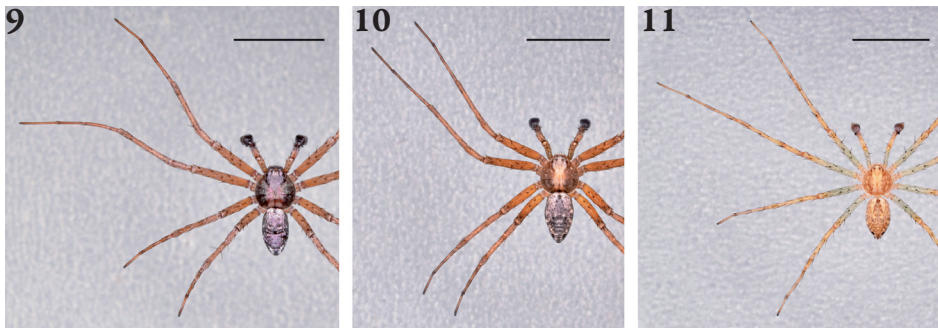
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Figs 6–8. Copulatory and genital organs of *Ph. buchari*, 6 = male's left palp, ventral view, 7 = epigyne, ventral view, 8 = epigyne/vulva, dorsal view



Figs 9–11. Male specimens from *Ph. aureolus* group from Hungary, dorsal view, 9 = *Ph. aureolus* (Clerck, 1757), 10 = *Ph. cespitum* (Walckenaer, 1802), 11 = *Ph. longipalpis* Simon, 1870. Scales = 5 mm

Comparative material – *Philodromus aureolus* (Clerck, 1757) (Fig. 9): HUNGARY (2 ♂♂). **Budapest:** Normafa, 47° 30' 10" N, 18° 58' 05" E, 433 m a.s.l., urban green area with deciduous forest vegetation, 28.IV.2018, leg. & det. L. Mezőfi (1 ♂, matured in captivity). **Pest county:** Érd, 47° 24' 30" N, 18° 54' 14" E, 191 m a.s.l., private garden, 12.V.2018, leg. & det. L. Mezőfi (1 ♂).

Philodromus cespitum (Walckenaer, 1802) (Fig. 10): HUNGARY (5 ♂♂, 4 ♀♀). **Baranya county:** Kővágószőlős, 46° 04' 36" N, 18° 07' 45" E, 227 m a.s.l., natural forest, 24.VI.2017, leg. D. Horváth, det. L. Mezőfi (1 ♂). **Pest county:** Monorierdő, 47° 19' 13" N, 19° 31' 12" E, 154 m a.s.l., organic apple orchard, 18.V.2016, leg. & det. L. Mezőfi (1 ♀). **Szabolcs-Szatmár-Bereg county:** Fülöpösdaróc, 47° 56' 17" N, 22° 29' 12" E, 110 m a.s.l., organic apple orchard, 10.V.2016, leg. & det. L. Mezőfi (1 ♂, 1 ♀); Nagykovács, 47° 49' 29" N, 21° 47' 33" E, 124 m a.s.l., organic apple orchard, 21.IX.2016, leg. & det. L. Mezőfi (1 ♂, matured in captivity); Nyírcsaholy, 47° 55' 17" N, 22° 18' 43" E, 126 m a.s.l., organic apple orchard, 17.VI.2015, leg. & det. L. Mezőfi (1 ♂); Ökörítőfülpös, 47° 55' 22" N, 22° 27' 51" E, 111 m a.s.l., organic apple orchard, 10.V.2016, leg. & det. L. Mezőfi (1 ♂); Újfehértó, 47° 49' 12" N, 21° 39' 57" E, 119 m a.s.l., organic apple orchard, 9.IX.2014, leg. & det. L. Mezőfi (1 ♀). **Tolna county:** Madocsa, 46° 40' 49" N, 18° 58' 32" E, 92 m a.s.l., apple orchard, 28.VII.2017, leg. & det. L. Mezőfi (1 ♀).

Philodromus longipalpis Simon, 1870 (Fig. 11): HUNGARY (4 ♂♂, 3 ♀♀). **Budapest:** Haller Park, 47° 28' 29" N, 19° 04' 47" E, 109 m a.s.l., urban green area, 22.VI.2016, leg. D. Korányi, det. L. Mezőfi (1 ♂); Buda Arboretum, 47° 28' 49" N, 19° 02' 24" E, 120 m a.s.l., urban green area, 28.VI.2016, leg. & det. L. Mezőfi (1 ♂), 4.VII.2016, leg. & det. L. Mezőfi (1 ♀). **Bács-Kiskun county:** Sükösd, 46° 17' 59" N, 19° 00' 21" E, 100 m a.s.l., organic apple orchard, 17.V.2016, leg. & det. L. Mezőfi (1 ♂). **Fejér county:** Székesfehérvár, 47° 11' 17" N, 18° 25' 10" E, 112 m a.s.l., on a house wall, 31.VII.2018, leg. D. Horváth, det. L. Mezőfi (1 ♀). **Pest county:** Monorierdő, 47° 19' 13" N, 19° 31' 12" E, 154 m a.s.l., organic apple orchard, 17.VI.2016, leg. & det. L. Mezőfi (1 ♂). **Szabolcs-Szatmár-Bereg county:** Újfehértó, 47° 49' 10" N, 21° 40' 17" E, 121 m a.s.l., apple orchard, 13.IX.2017, leg. & det. L. Mezőfi (1 ♀).

Distribution – In Europe, *Ph. buchari* is present in Austria, Belgium, Czech Republic, France, Germany, Italy (including Sardinia), Slovakia, Spain, Switzerland and Ukraine (KOVBLJUK *et al.* 2015, NENTWIG *et al.* 2018). Outside Europe it occurs in the Asian part of Turkey (MUSTER & THALER 2004).

Remarks – In the past *Ph. aureolus* was considered a highly variable species and more than a dozen subspecies or varieties were described, but many of which were synonymized later or elevated to species rank (BRAUN 1965, SEGERS 1992, MUSTER & THALER 2004). In the *Ph. aureolus* group certain species are quite difficult to separate, because they differ only in small details of their copulatory/

genital organs. Furthermore, the identification is made more difficult by the fact that different species in *Ph. aureolus* group can occur sympatrically in the same habitat (PETRÁKOVÁ *et al.* 2016). *Philodromus buchari* (Figs 1–8) may be mostly confused with *Ph. aureolus* (Fig. 9), *Ph. cespitum* (Fig. 10) or *Ph. longipalpis* (Fig. 11) (KUBCOVÁ 2004, MUSTER & THALER 2004). For detailed description of the species and identification see the key of KUBCOVÁ (2004) or MUSTER & THALER (2004). *Ph. buchari*, as several other *Philodromus* species from the *aureolus* group, was often misidentified in the past, so it is difficult to determine its exact distribution. Probably many records of the above mentioned three *Philodromus* species belong to *Ph. buchari* in Central Europe or in the Mediterranean region.

In the sampling site of Diósd, *Ph. buchari* was abundant, and all collected individuals possessed the specific characters of the species. After examining other materials we concluded that this species is more widespread in Hungary than it was previously expected. Although *Ph. buchari* is first reported from this country, it is probably native in Hungary. According to KUBCOVÁ (2004) *Ph. buchari* prefers forest steppe and rock steppe habitats and usually occurs on *Quercus* branches. In Diósd *Ph. buchari* individuals were also collected from branches of *Quercus pubescens* in a forest steppe-like habitat.

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