

First Record of Rare Spider *Walckenaeria incisa* (O. Pickard-Cambridge, 1871) (Araneae: Linyphiidae) from Türkiye

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Abstract: The rare known linyphiid spider *Walckenaeria incisa* (O. Pickard-Cambridge, 1871) is recorded for the first time in Türkiye. Species were collected using pitfall traps in a red pine forest near Spil Mountain. With this record, the number species belonging to *Walckenaeria* in Türkiye has increased to 12. *Walckenaeria stylifrons* (O. Pickard-Cambridge, 1875) was also collected in the study area. The diagnostic photographs of the habitus and genitalia of both species are given.

Keywords: Araneofauna, new locality, distribution, Spil Mountain, Manisa.

Nadir Bilinen Örümcek *Walckenaeria incisa* (O. Pickard-Cambridge, 1871)'nın (Araneae: Linyphiidae) Türkiye'den İlk Kaydı

Öz: Nadir olarak bilinen Linyphiid örümceği *Walckenaeria incisa* (O. Pickard-Cambridge, 1871) Türkiye'de ilk kez kayıt altına alınmıştır. Tür, kızılçam ormanına kurulan çukur tuzak yöntemi ile Spil Dağı'ndan toplanmıştır. Bu kayıt ile Türkiye'deki *Walckenaeria* tür sayısı 12'ye çıkarılmıştır. Ayrıca çalışma alanında *Walckenaeria stylifrons* (O. Pickard-Cambridge, 1875) da toplanmıştır. Her iki türün habitus ve üreme organlarının fotoğrafları verilmiştir.

Anahtar kelimeler: Araneofauna, yeni kayıt, yayılış, Spil Dağı, Manisa.

1. Introduction

Linyphiidae Blackwall, 1859 is one of the most species-rich families of spiders, with over 4841 species in 636 genera (World Spider Catalog, 2023). It is represented by 155 species and 74 genera in Türkiye (Danışman et al., 2023). The members of the family can be distinguished by the combination of the following characters: three tarsal claws (no claw tufts, scopulae, auxiliary claws); no comb of serrated setae on tarsus IV; wider clypeus; chelicerae usually with stridulating ridges in one or both sexes (sometimes modified in males), and presence of male palpal paracymbium (which can be a simple U- or J-shaped or more complex) (Roberts, 1987; Murphy & Roberts, 2015).

The genus *Walckenaeria* Blackwall, 1833 is a small body-sized spider that ranges from 1.5 to 4 mm in length and can be distinguished from the other genera of the family by the remarkable variation in male cephalic morphology (the males of most species have the head modified in the form of lobes or various projections), the stout teeth on the tarsal claws, the longer sternum, the position of trichobothrium on metatarsus I at 0.4 - 0.6 range, the presence of trichobothrium on metatarsus IV, the formula of tibial dorsal spine as 2-2-1-1, and the wide and loosely coiled embolus of male palp (Holm, 1984; Roberts, 1987). A total of 199 species of the genus have been recorded from all over the world, including 103 species listed in the Palaearctic region (World Spider Catalog, 2023). Eleven species of *Walckenaeria* have been recorded in Türkiye. These are: *W. abantensis* Wunderlich, 1995, *W. aksoyi* Seyyar, Demir & Türkeş, 2008, *W. alticeps*

(Denis, 19524), *W. antica* (Wider, 1834), *W. atrotibialis* (O. Pickard-Cambridge, 1878), *W. cirriceps* Thaler, 1996, *W. corniculans* (O. Pickard-Cambridge, 1875), *W. dysderoides* (Wider, 1834), *W. furcillata* (Menge, 1869), *W. plumata* Millidge, 1979, and *W. stylifrons* (O. Pickard-Cambridge, 1875) (Danışman et al., 2023; Danışman & Coşar, 2023; Sancak et al., 2022). Among them, only *W. aksoyi* is endemic to Türkiye.

While examining the samples collected for the project on the spider fauna of Spil Mountain, two species of *Walckenaeria* were identified. While, *W. incisa* is recorded for the first time in Türkiye, a new locality record is added to the distribution of *W. stylifrons*. The purpose of the present study is to give the first record of *W. incisa* and a new locality record for *W. stylifrons*.

2. Material and Methods

This paper is based on the material collected from Spil Mountain in Manisa Province (Aegean Region) of Türkiye. Spiders were collected by using pitfall traps between 2020 and 2021. They were preserved in 70% ethanol and deposited in the Alaşehir Zoological Museum, Manisa Celal Bayar University, Alaşehir, Manisa, Türkiye (AZMM). The identification was made by using the descriptions of Roberts (1987), Heimer and Nentwig (1991), and Gnelitsa (2003). The digital images were taken with a Leica DFC295 digital camera attached to a Leica S8APO stereo microscope. The measurements were taken from the dorsal side of the body and all measurements are in millimeters.

The taxonomy follows the World Spider Catalog

(2023) and the terminology of male palpus follows Merrett (1963), Millidge (1977), Saaristo and Tanasevitch (1996), and Gnelitsa (2003).

3. Results

Family Linyphiidae Blackwall, 1859

Walckenaeria Blackwall, 1833

Walckenaeria incisa (O. Pickard-Cambridge, 1871)

For a complete list of synonyms, see the World Spider Catalog (2023).

Material Examined. Türkiye, 1♀, 1♂, Manisa Province, Spil Mountain, west entrance of National Park, 13.08.2020-15.04.2021, 38°34'10"N, 27°26'58"E, 1136 m, pitfall traps in *Pinus brutia* forest, leg. E.A. Yağmur and S. Anlaş.

Description. (Figs. 1-11) (The description was made from the preserved specimens).

Male.

Total length: 2.25 mm. Carapace: 1.0 mm long and 0.7 mm wide. Abdomen: 1.25 mm long and 0.75 mm wide. Male in similar appearance to female except for head area elevated into a lobe that carries posterior median eyes and clypeus slightly projecting anteriorly (Figs. 1-2).

Palp. Tibia is U-shaped in dorsal view, with a large, pointed claw-shaped prolateral process and a short retrolateral outgrowth. Embolus relatively long, spiral-shaped and has nearly 1.5 loops (Figs. 3-8).

Female.

Total length: 2.7 mm. Carapace: 1.0 mm long and 0.8 mm wide. Abdomen: 1.6 mm long and 0.85 mm wide. Cephalothorax is brown, longer than wide, and the cephalic region is darker. Chelicerae are dark brown and have 4 promarginal and 5 retromarginal teeth. The eye region is wide and the posterior row of eyes procurved. The anterior median eyes are smaller than the lateral ones. The distance between the posterior median eyes is shorter than the diameter of one of the posterior median eyes. Carapace is slightly elevated in the ocular area but is not forming a protuberance. Sternum is dark brown. Legs are yellowish-brown, long and slender. The abdomen pale grayish, covered with fine hairs and slightly elongated. Spinnerets are pale grayish.

Epigyne. The epigynal plate is wider than long, semicircular-shaped and clearly sclerotized at anteriorly (Figs. 9-11).

Habitat. The specimens were collected in a red pine forest (*Pinus brutia*). The specimens of *W. incisa* were obtained from pitfall traps set inside the leaf litter of pine needles.

Distribution. *Walckenaeria incisa* was originally described from the United Kingdom (Llanwrst, North Wales) by O. Pickard-Cambridge (1871) as *Neriene incisa*. It has been recorded from Belgium (Bosmans and Van Keer, 2017), Greece (Tanasevitch, 2011), Hungary (Samu & Szinetár, 1999), Luxembourg (Kreuels et al., 2019), Poland (Hajdamowicz et al., 2014), Spain (Branco et al., 2019), Sweden (Kronstedt, 2001), Ukraine (Polchaninova & Prokopenko, 2019), United Kingdom (Pickard-Cambridge, 1871), Denmark, France, Germany, Italy, Lithuania, Netherlands, Slovakia, and Switzerland

(Nentwig et al., 2023).

Walckenaeria stylifrons (O. Pickard-Cambridge, 1875)

For a complete list of synonyms, see the World Spider Catalog (2023).

Material Examined. Türkiye, 1♂, Manisa Province, Spil Mountain, Ayvacık Village, 2 km southwest, 21.05-13.08.2020, 38°32'17"N, 27°27'36"E, 1119 m, pitfall traps in *Pinus brutia* forest, leg. E.A. Yağmur and S. Anlaş.

Description. (Figs. 12-16) (A description was made from the preserved specimen)

Male.

Total length: 1.7 mm. Carapace: 0.75 mm long and 0.55 mm wide. Abdomen: 0.95 mm long and 0.57 mm wide. Cephalothorax is dark brown, longer than wide, and the cephalic region is darker. Chelicerae are dark brown. The posterior row of eyes is procurved. The anterior median eyes are smaller than the lateral ones. The distance between the posterior median eyes is shorter than the diameter of one of the posterior median eyes. Carapace is slightly elevated in the ocular area. Head elevated into a lobe including posterior median eyes, anterior to this lobe there is a much smaller lobe carrying a pair of horns directed antero-laterally. Sternum is dark brown. Legs are yellowish-brown, long and slender. The abdomen dark grayish, covered with fine hairs and slightly elongated. Spinnerets are pale (Figs. 12-14).

Palp. Tibia with a long and pointed prolateral process and a short retrolateral small two-round and swollen outgrowth. Embolus is spiral shaped, short and wide (Figs. 15-16).

Habitat. The specimens were collected in a red pine forest (*Pinus brutia*) and inside a small valley. The specimens of *W. stylifrons* were obtained from pitfall traps set inside of the leaf litter of pine needles.

Distribution. Europe and Türkiye (World Spider Catalog, 2023).

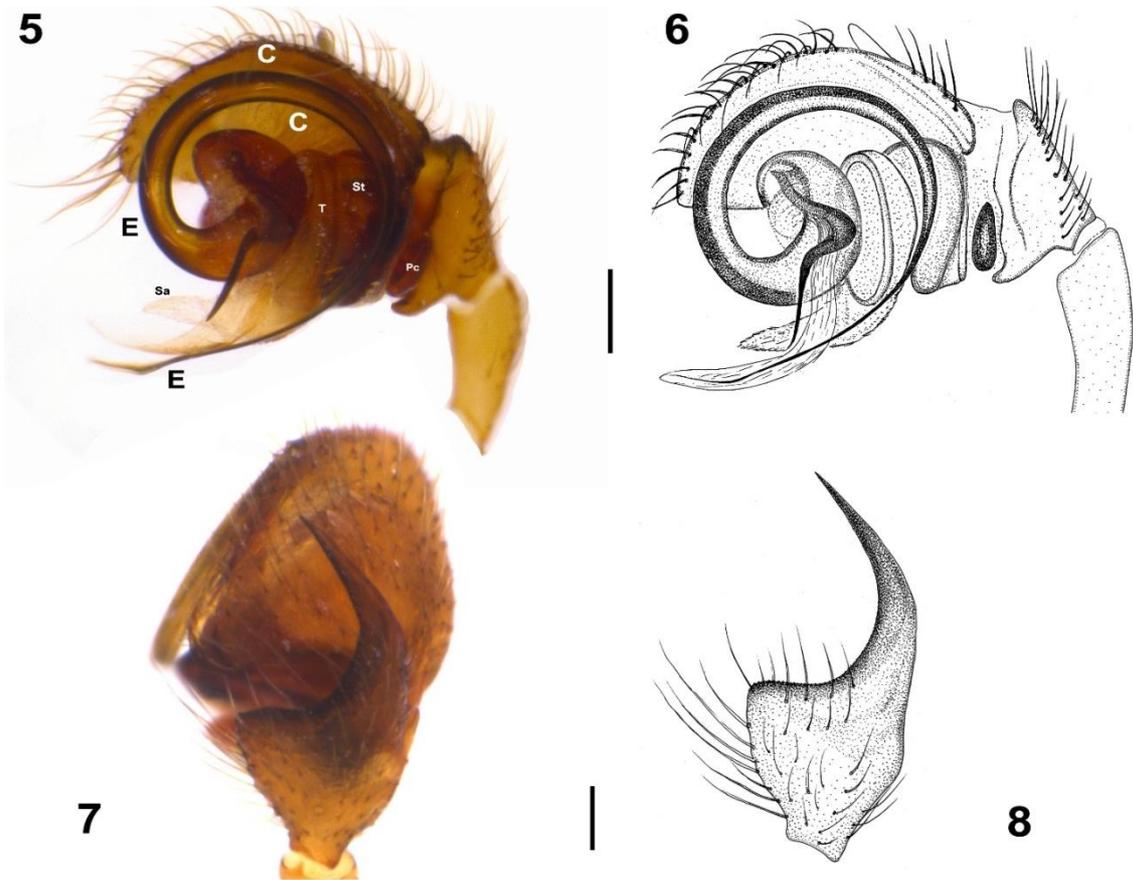
Walckenaeria stylifrons was originally described in Corsica (France) by Pickard-Cambridge (1875). It has been recorded from Belgium (Bosmans and Van Keer, 2017), Bulgaria (Blagoev et al., 2018), Cyprus (Bosmans et al., 2019), France (Pickard-Cambridge, 1875), Greece (Tanasevitch, 2011), Italy (Pantini & Isaia, 2019), North Macedonia (Komnenov, 2014), Russia (Ponomarev, 2022), Slovakia (Purgat et al., 2021), Spain (Branco et al., 2019), Türkiye (Sancak et al., 2022), United Kingdom (Lavery, 2019), Austria, Germany, Netherlands, Switzerland, and Ukraine (Nentwig et al., 2023).

4. Discussion

The species *W. incisa* is a rare spider species known only from Europe (Nentwig et al., 2023). In Europe, it has been recorded mainly from lowlands and occasionally river valleys of uplands or mountains. Due to the fact that only 1-2 specimens have been found in each of the listed localities, the species has the status of having the highest rarity in many European countries (Loksa, 1978; Hajdamowicz et al., 2014). According to Agnarsson (1996), the species is rarely found possibly due to its winter activity.

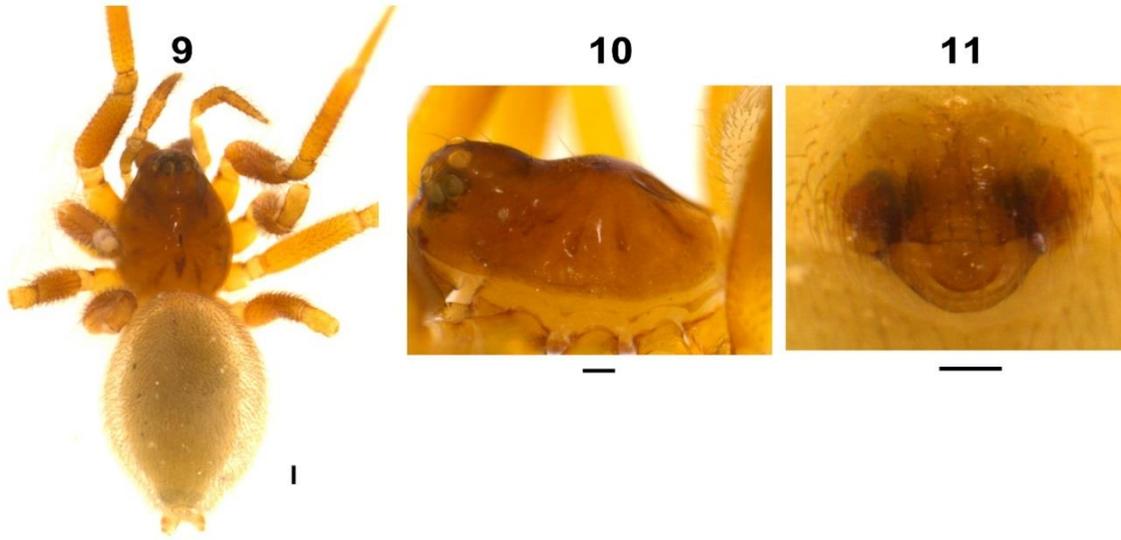


Figures 1-4. Male *Walckenaeria incisa* (O. Pickard-Cambridge, 1871). 1. Habitus, dorsal view. 2. Cephalothorax, lateral view. 3. Male palp, ventral view. 4. Male palp, retrolateral view. Scale lines: 0.1 mm.

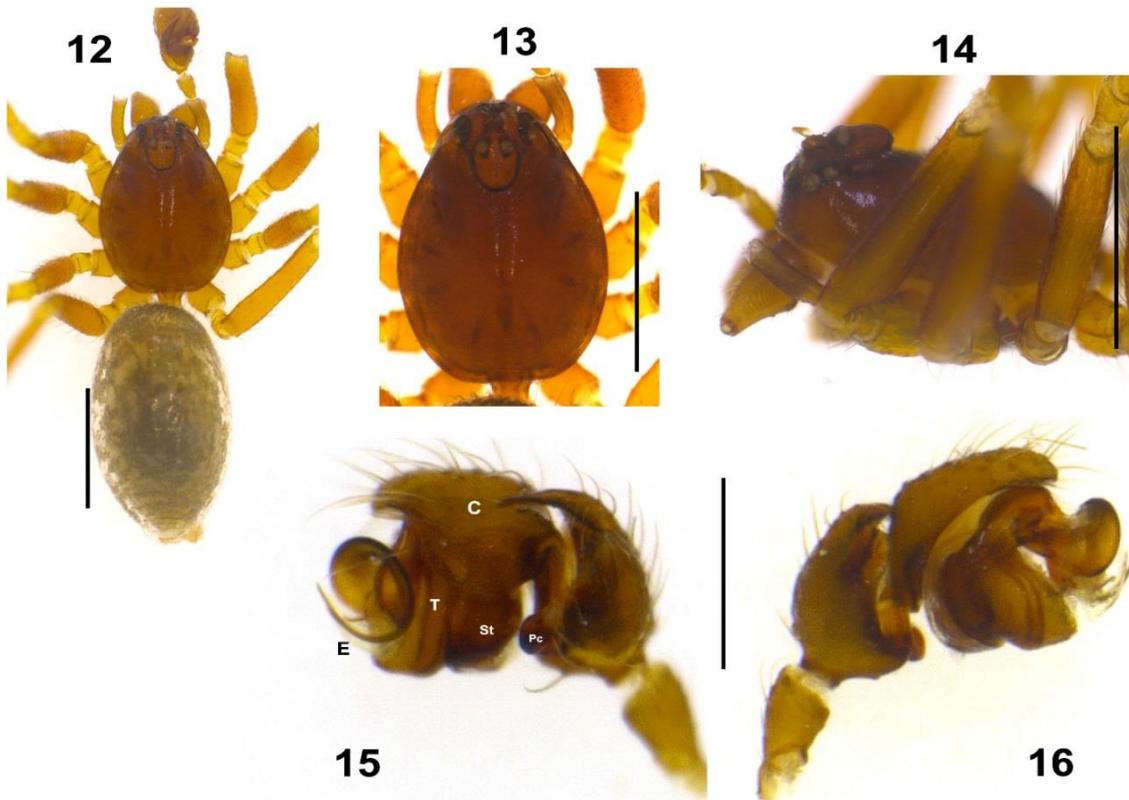


Figures 5-8. Male *Walckenaeria incisa* (O. Pickard-Cambridge, 1871). 5-6. Male palp, mesal view. 7. Male palp, dorsal view. 8. Male palp, tibia dorsal view. Scale lines: 0.1 mm.

C: Cymbium, E: Embolus, Pc: Paracymbium, Sa: Suprategular apophysis, St: Subtegulum, T: Tegulum.



Figures 9-11. Female *Walckenaeria incisa* (O. Pickard-Cambridge, 1871). 9. Habitus, dorsal view. 10. Female cephalothorax, lateral view. 11. Epigyne, ventral view. Scale lines: 0.1 mm.



Figures 12-16. Male *Walckenaeria stylifrons* (O. Pickard-Cambridge, 1875). 12. Habitus, dorsal view. 13. Cephalothorax, dorsal view. 14. Cephalothorax, lateral view. 15. Palp, retrolateral view. 16. Palp, prolateral view. Scale lines: 12-14: 0.5mm, 15-16: 0.1 mm.

C: Cymbium, E: Embolus, Pc: Paracymbium, Sa: Suprategular apophysis, St: Subtegulum, T: Tegulum.

Similarly, *W. stylifrons* is a rarely collected European species, too. This species was recently reported from Türkiye as well as being known from Bulgaria, Greece, North Macedonia, and Ukraine that is close to Türkiye (Nentwig et al., 2023). In Europe, it has been recorded in dry, open, sandy places (Wunderlich, 1972), among low vegetation in old dunes (Jocqué, 1977), young pine stands on aeolian sand dunes and a ruderalized soil-stone terrace between two vineyard parcels (Purgat et al., 2021), and under the stones in a pine forest (Sancak et al. 2022). According to Purgat et al. (2021), the rarity of *W. stylifrons*

may be due to the occurrence of adults mostly in winter as most researchers focus their collection efforts during spring and autumn.

In our study, both species were collected by pitfall traps in a *Pinus brutia* forest in litter. It can be estimated that both species can be found in dry forests along the river valleys or in wet conditions in dry forests in Türkiye.

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