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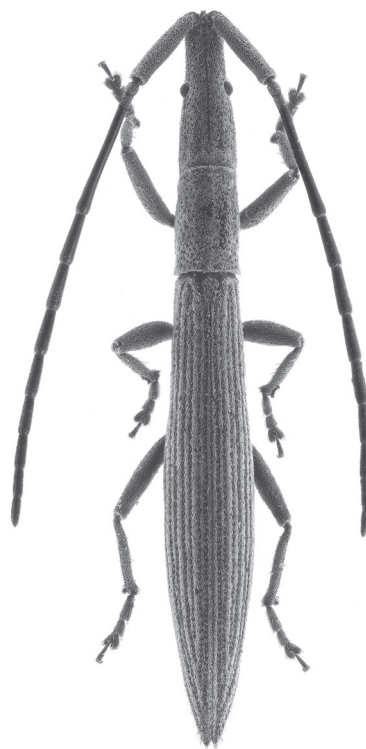


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A new record of *Ceratinella* Emerton, 1882 (Araneae: Linyphiidae) from Turkey

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Abstract. A new, illustrated record of the linyphiid species, *Ceratinella scabrosa* (O. Pickard-Cambridge, 1871), for the araneofauna of Turkey is presented. The distribution of this species in Turkey is mapped as well. In addition, the distribution of the *Ceratinella brevis* (Wider, 1834) species is shown on the map. Also, electron microphotographs of the female genitalia of the species are given. Species were collected from Bolu, Kastamonu and Sinop provinces in Turkey's Black Sea region between 2012 and 2013 using pitfall traps and hand aspirators. With this new record, the number of species belonging to the family Linyphiidae in Turkey has increased to 148.

Key words: Aranei, Black Sea region, Turkey, money spiders, new records, morphology.

Новая находка рода *Ceratinella* Emerton, 1882 (Araneae: Linyphiidae) в Турции

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Резюме. Вид *Ceratinella scabrosa* (O. Pickard-Cambridge, 1871) (Linyphiidae) впервые указан для аранеофауны Турции. Представлены фотографии взрослых особей, гениталий, СЭМ-микрофотографии гениталий самки и карта распространения этого и второго вида рода (*C. brevis* (Wider, 1834)), известного из Турции. Оба вида найдены в черноморском регионе Турции в 2012–2013 годах с использованием почвенных ловушек и с помощью ручного сбора: *Ceratinella scabrosa* в провинциях Кастамону и Синоп, *C. brevis* – в провинции Болу. С учетом новой находки число видов семейства Linyphiidae в Турции увеличилось до 148.

Ключевые слова: Aranei, Черноморский регион, Турция, линифиды, новые находки, морфология.

Introduction

The family Linyphiidae Blackwall, 1859 is the second largest spider family, with 4717 species in 622 genera being recorded/described worldwide [World Spider Catalog, 2021], of which 1369 species in 222 genera being known from Europe [Nentwig et al., 2021]. The genus *Ceratinella* Emerton, 1882 consists of 27 valid species [World Spider Catalog, 2021], with six of them occurring in Europe [Nentwig et al., 2021]. To date, the single *Ceratinella* species has been found in Turkey [Danişman et al., 2021]: *C. brevis* (Wider, 1834). This short paper presents the characteristic features and distribution of *C. scabrosa* (O. Pickard-Cambridge, 1871), the second *Ceratinella* species recorded from the spider fauna of Turkey for the first time.

Material and methods

Spiders were collected from three different provinces of the Black Sea region of Turkey by hand-collecting with a pooter and by pitfall traps. Digital images were made by using a Canon EOS 250D camera attached to a Leica S8APO microscope. Images were stacked and then edited by means of the Combine ZM and Photoshop CC 2019 software. Epigyne was dissected and dissolved in a 88% lactic acid solution. For scanning electron microscopy (SEM) observations, the specimens were dissected and dehydrated in a graded ethanol series (80–100%), critical

point dried, and gold coated with a Polaron SC-500. SEM microphotographs were taken under high vacuum with a JEOL JSM-5600. The studied materials are preserved in 70% ethanol and deposited in the Arachnological Museum of the Kırıkkale University (KUAM).

Family Linyphiidae Blackwall, 1859

Genus *Ceratinella* Emerton, 1882

Ceratinella scabrosa (O. Pickard-Cambridge, 1871)
(Figs 1–11, 16–19, 23)

Material. Turkey. 2♂, 1♀ (KUAM-LIN-2021/62), Kastamonu Prov., Azdavay Distr., Çatak Canyon, 41.65166°N / 33.24888°E, 1122 m, pitfall traps, 28.04–8.07.2013 (K.B. Kunt); 2♂, 3♀ (KUAM-LIN-2021/60), Sinop Prov., Ayancık Distr., 41.92842°N / 34.61649°E, 251 m, from the leaf litter under the oak tree, 8.06.2013 (T. Danişman, İ. Coşar); 1♂, 4♀ (KUAM-LIN-2021/61), Kastamonu Prov., İlica Distr., 41.65430°N / 33.11379°E, 686 m, from leaf litter, 9.07.2013 (K.B. Kunt).

Comparative material. *Ceratinella brevis* (Figs 12–15, 20–22): 1♂, 6♀ (KUAM-LIN-2014/23), Turkey, Bolu Prov., Mudurnu Distr., 40.62422°N / 31.31131°E, 13.09.2012 (T. Danişman).

Diagnosis. The male of this species differs from *C. brevis* in having the simple supporting lamella with two helixes (Fig. 10), the bent, C-shaped paracymbium, and the conformation of the tibial apophysis (Fig. 11). The female differs from that of *C. brevis* in the dome shaped epigynal plate (Fig. 17) and the spermathecae that are separated from each other by two their diameters (Fig. 16).

Redescription. Male (KUAM-LIN-2021/60). Total length 2 mm. Carapace 0.9 mm long, 0.7 mm wide. Abdomen 1.1 mm long, 1.1 mm wide. Carapace brown, high its anterior part, with a cephalic lobe (Fig. 1). Clypeus wide, yellowish-brown,

with a dark pattern in the middle. Chelicerae light yellow, with few hairs near teeth (Fig. 7). Sternum brown, labium and maxilla light brown (Fig. 2). Chelicerae with 3 teeth, of which 2 are very large, third tooth small. Abdomen grey-brown, dorsally completely covered with blackish-brown scutum. Legs light brown-yellow (Figs 1, 2). Pedipalp with simple supporting lamella, without lamella characteristic; the embolic supporting lamella surrounds the supratragular apophysis by forming two helices; tibial apophysis longer than wide; paracymbium simple, bent, C-shaped. Pedipalp as in Figs. 9–11.

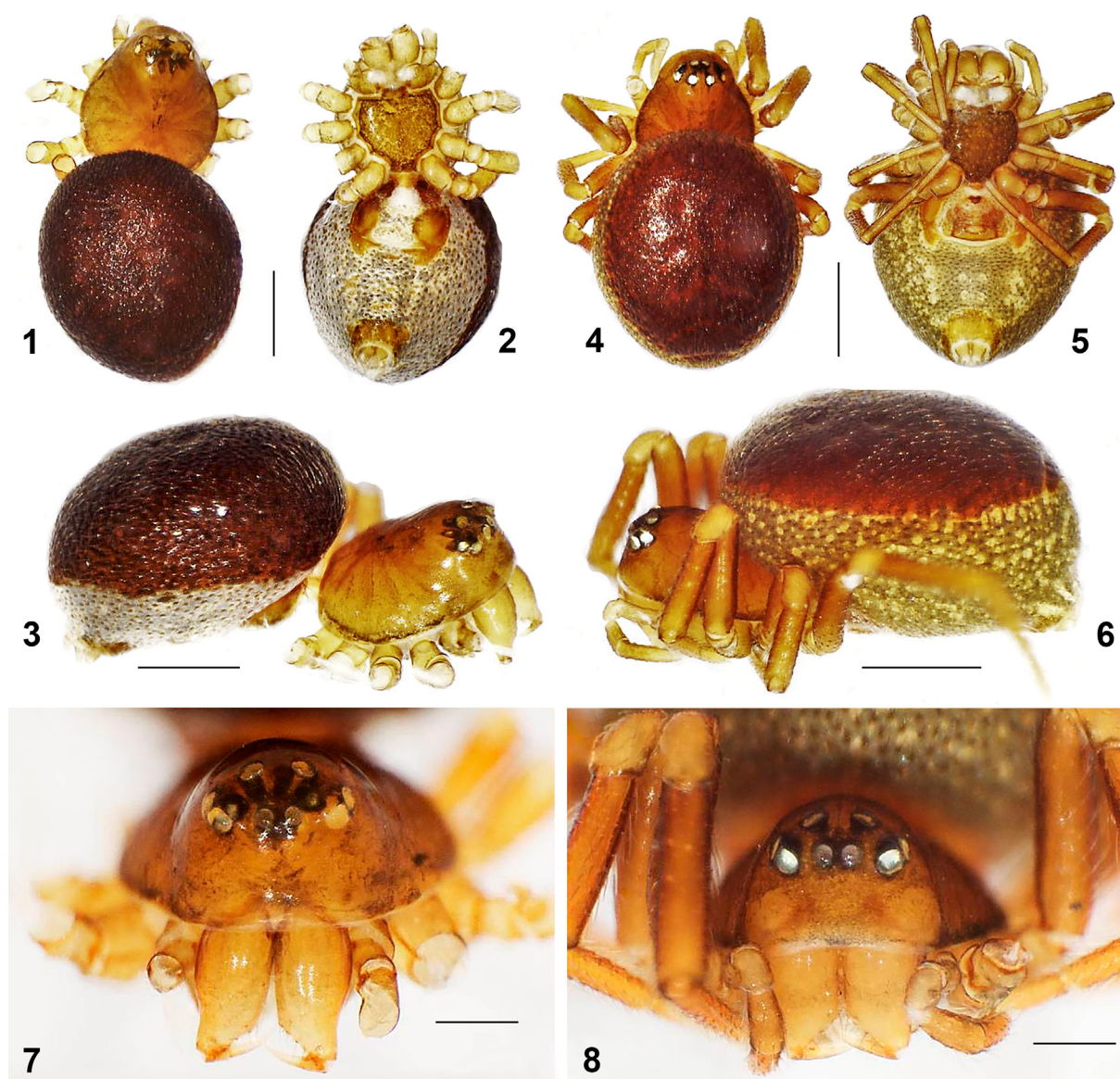
Female (KUAM-LIN-2021/60). Total length 2.1 mm. Carapace 0.9 mm long, 0.7 mm wide. Abdomen 1.2 mm long, 1.1 mm wide. Carapace brown, its anterior part without a cephalic lobe (Fig. 4). Clypeus wide, yellowish-brown. Chelicerae light yellow, with few hairs near teeth (Fig. 8). Sternum brown, labium and maxilla light brown (Fig. 5). Abdomen brown-yellow, with scutum completely

covering dorsum. Legs brown-light yellow (Figs 4, 5). Epigynal plate dome-shaped, sclerotized on both sides (Figs 17–19); vulva with a rounded spermatheca on each side; spermathecae separated by two their diameters (Fig. 19).

Distribution. Europe to South Siberia, including the Caucasus and Crimea (?) [Kovblyuk, Kastrygina, 2015; Otto, 2020; World Spider Catalog, 2021]. The records in Turkey are shown in Figure 23.

Discussion

There were recorded/described 68 genera and 116 species of the Linyphiidae from Turkey. However, in the last four years, four new species and 16 additional

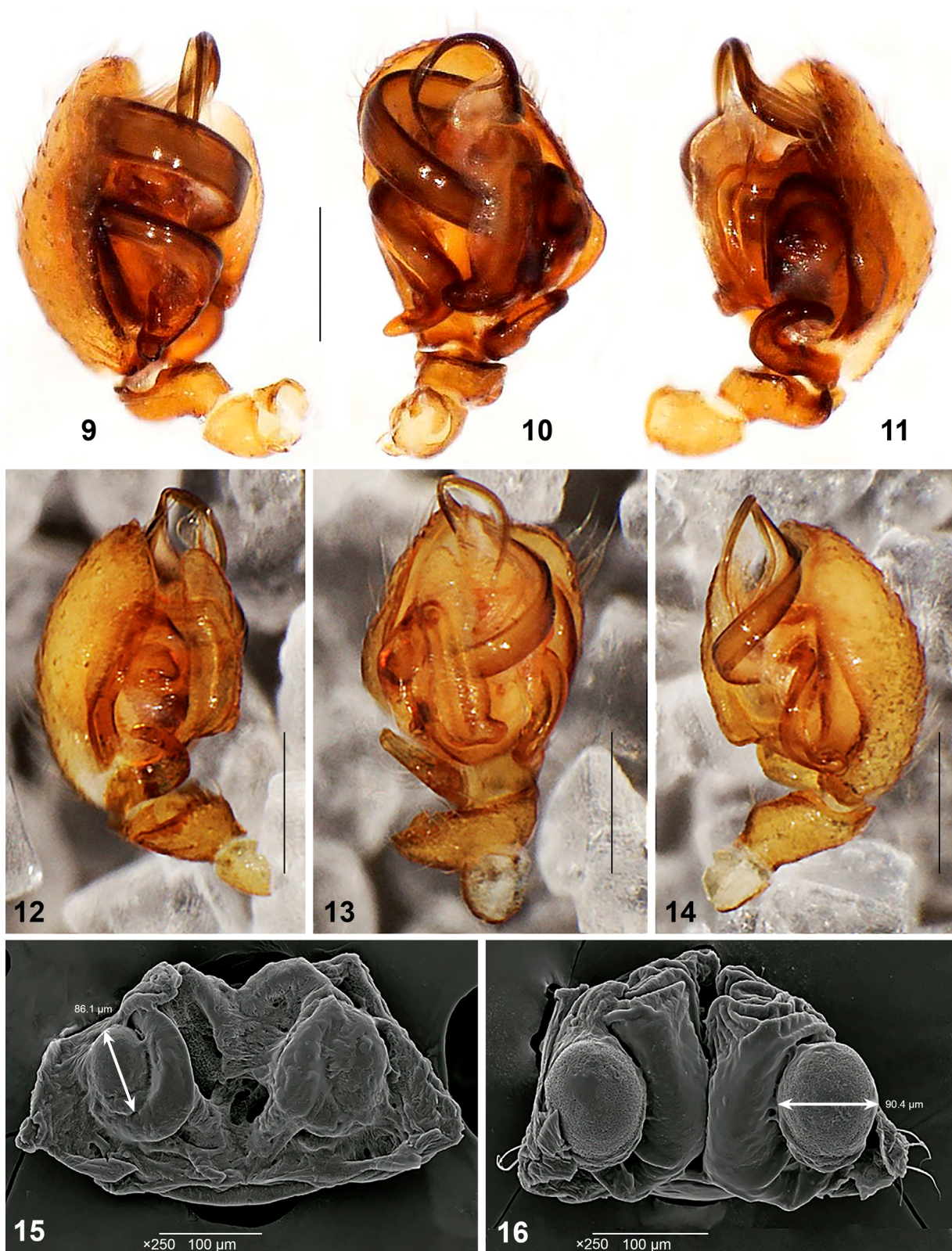


Figs 1–8. *Ceratinella scabrosa*, general view and details of structure.

1–3, 7 – male; 4–6, 8 – female; 1–6 – habitus: 1, 4 – dorsal view, 2, 5 – ventral view, 3, 6 – lateral view; 7–8 – ocular area, frontal view. Scale bars 0.2 mm.

Рис. 1–8. *Ceratinella scabrosa*, общий вид и детали строения.

1–3, 7 – самец; 4–6, 8 – самка; 1–6 – габитус: 1, 4 – вид сверху, 2, 5 – вид снизу, 3, 6 – вид сбоку; 7–8 – глазная область, вид спереди. Масштабные линейки 0.2 мм.

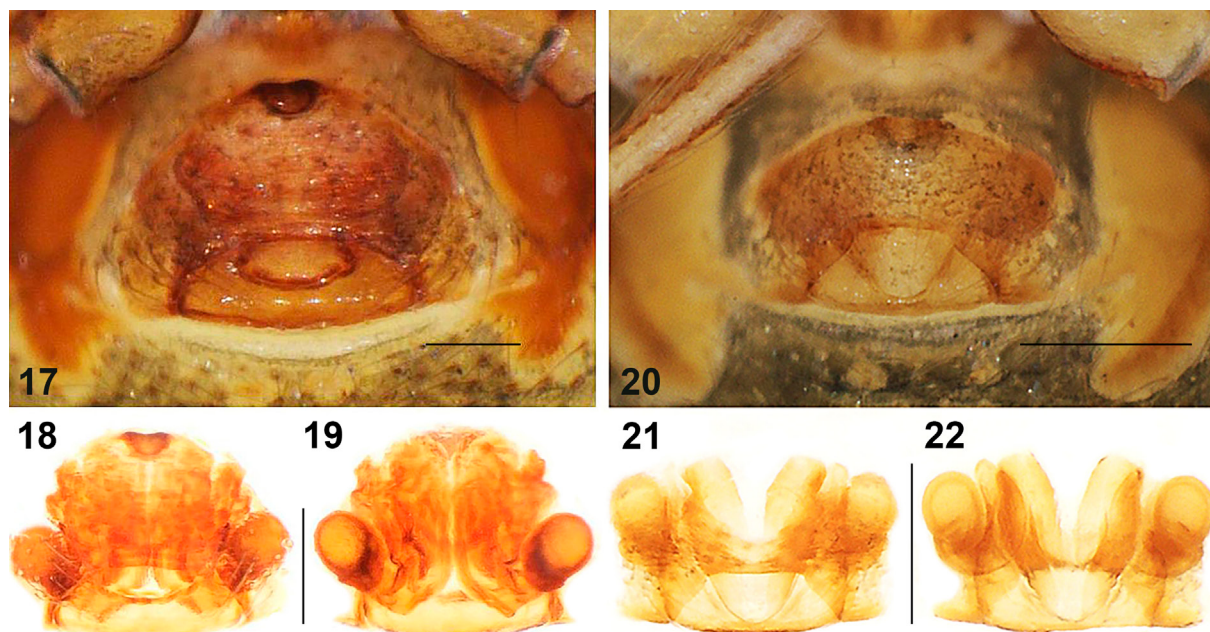


Figs. 9–16. Species of the genus *Ceratinella* from Turkey, details of structure.

9–11, 16 – *C. scabrosa*; 12–15 – *C. brevis*. 9–14 – male palp: 9, 12 – prolateral view, 10, 13 – ventral view, 11, 14 – retrolateral view; 15–16 – SEM microphotographs of vulva, dorsal view, spermatheca diameters 86.1 μm and 90.4 μm , respectively. Scale bars (for Figs 9–11 the same) 0.2 mm.

Рис. 9–16. Виды рода *Ceratinella* из Турции, детали строения.

9–11, 16 – *C. scabrosa*; 12–15 – *C. brevis*. 9–14 – палпы самца: 9, 12 – пролатерально, 10, 13 – вентрально, 11, 14 – ретролатерально; 15–16 – СЭМ-микрофотографии вульвы, дорсально, диаметр сперматеки 86.1 μm и 90.4 μm соответственно. Масштабные линейки (для рисунков 9–11 общая) 0.2 мм.



Figs 17–22. Species of the genus *Ceratinella* from Turkey, female copulatory organs.

17–19 – *C. scabrosa*; 20–22 – *C. brevis*. 17–18, 20–21 – epigyne, ventral view; 19, 22 – vulva, dorsal view. Scale bar 0.2 mm.

Рис. 17–22. Виды рода *Ceratinella* из Турции, копулятивные органы самки.

17–19 – *C. scabrosa*; 20–22 – *C. brevis*. 17–18, 20–21 – эпигина, вид снизу; 19, 22 – вульва, вид сверху. Масштабные линейки 0.2 мм.

species in 8 genera have been described or recorded from Turkey [Dimitrov, 2018, 2020; Danişman, Coşar, 2019a, b, c; Danişman et al., 2020; Koç et al., 2020; Sancak et al., 2020; Lecigne, 2021]. One species has been synonymized as well [Dimitrov, Deltchev, 2019]. Thus, given these contributions and the new record presented in this paper, a number of the linyphiid species of Turkey has increased to 148. While comparing this number of Linyphiidae with those of the neighboring countries of significantly smaller areas, such as Greece (171), Bulgaria (251), Cyprus (47), Georgia (110) and Armenia (42) [Bosmans et al., 2019; Otto, 2020; Nentwig et al., 2021], many more new species records are to be expected from Turkey. In order to reveal the linyphiid species diversity of Turkey, more taxonomic studies are

to be carried out in the Black Sea, Eastern Anatolia and Southeastern Anatolia regions bordering the neighboring countries.

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Fig. 23. Collecting localities of *Ceratinella brevis* (square) and *C. scabrosa* (circles) in Turkey.

Рис. 23. Места сборов *Ceratinella brevis* (квадрат) и *C. scabrosa* (круги) в Турции.

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