



---

RESEARCH ARTICLE

---

NEW DATA ON TWO SPIDER SPECIES (ARANEAE) FROM ULUDAĞ MOUNTAIN, BURSA

Rahşen S. KAYA <sup>1,\*</sup>

<sup>1</sup> Department of Biology, Faculty of Arts and Science, Bursa Uludağ University, Bursa, Türkiye  
[rkaya@uludag.edu.tr](mailto:rkaya@uludag.edu.tr) - [0000-0002-3769-9105](https://orcid.org/0000-0002-3769-9105)

---

Abstract

In this study, mimetid spider *Ero cambridgei* Kulczyński, 1911 is recorded from Türkiye for the first time. A male *E. cambridgei* was collected in the orb-web of a female *Cyclosa algerica* Simon, 1885. Morphological diagnosis, along with images of both species are provided. Additionally, the copulatory organs of *C. algerica* Simon, 1885 are compared with those of *C. sierrae* Simon, 1870 for diagnostic purposes with their photographs. Furthermore, the record of *C. algerica* in the Uludağ Mountain remarks the northernmost point of its distribution range in Türkiye.

---

Keywords

*Cyclosa algerica*,  
*C. sierrae*,  
*Ero cambridgei*,  
Fauna,  
Marmara Region

---

Time Scale of Article

Received :11 December 2024  
Accepted : 27 January 2025  
Online date :29 January 2025

---

1. INTRODUCTION

Members of Mimetidae comprise 163 species in 8 genera and are distributed worldwide, primarily in the tropics of Central and South America [1]. However, the biodiversity of Mimetidae remains poorly understood, most likely due to their small size and cryptic lifestyle. In Türkiye, only four species of mimetids have been reported: *Ero aphana* (Walckenaer, 1802), *E. flammeola* Simon, 1881, *E. furcata* (Villers, 1789), and *Mimetes laevigatus* (Keyserling, 1863) [2].

The pirate spider *Ero* C. L. Koch, 1836 is a cosmopolitan genus with 43 currently recognized species [1]. The main characters that have traditionally been used to distinguish *Ero* from the closely related genus *Mimetes* Hentz, 1832 are the height of the clypeus (higher in *Ero* than in *Mimetes*) and the length of the forelegs (in *Ero* legs I and II are subequal, while in *Mimetes* legs I are the longest) [3].

Araneidae Clerck, 1757 is the third largest family of spiders, with 3131 species in 191 genera worldwide [1]. In Türkiye, 55 species in 20 genera have been recorded [2]. The Araneid spider *Cyclosa* Menge, 1866 is a rich and globally distributed genus with 176 species. Four species of this genus are known from Türkiye: *C. algerica* Simon, 1885, *C. conica* (Pallas, 1772), *C. oculata* (Walckenaer, 1802), and *C. sierrae* Simon, 1870.

---

\*Corresponding Author: [rkaya@uludag.edu.tr](mailto:rkaya@uludag.edu.tr)

*Cyclosa algerica* is a Mediterranean species whose records for Europe so far concern only Portugal, Spain, France Algeria, Tunisia, Italy (Sicily), Greece, Azerbaijan, Iran and Bulgaria [1, 4]. The species has been recently recorded from Antalya province by Lecigne [5].

This paper presents the following findings: the first record of *E. cambridgei* in Türkiye; the first documented finding of *E. cambridgei* in the web of the araneid spider *C. algerica*; confirmation of the occurrence of *C. algerica* in Türkiye, along with the reporting of its northernmost distribution point.

## 2. MATERIALS AND METHODS

The samples examined in this study were collected from Uludağ Mountain (Bursa) in the Marmara region of Türkiye (Figure 1). Spiders were collected by hand collection. They were preserved in 70% ethanol and deposited in the Zoological Museum of the Bursa Uludağ University, Türkiye (ZMUU, R.S. Kaya).

The digital images were taken with a Leica DFC295 digital camera attached to a Leica S8APO stereo microscope and Leica M205 C. Measurements were taken from the dorsal side of the body and all measurements are in millimeters.

The nomenclature follows the World Spider Catalog [1], and the terminology of male palp follows Levi [6], Thaler et al. [7], and Marusik [8].



**Figure 1.** The locality where the specimens were collected from the Marmara Region of Türkiye.

## 3. RESULTS

### 3.1. Family Mimetidae Simon, 1881

Genus *Ero* C. L. Koch, 1836

*Ero cambridgei* Kulczyński, 1911

Figures 2a–e

*Ero cambridgei* Roberts [9]: page 170, figure 75a (♂♀).

*Ero cambridgei* Roberts [10]: page 258 (♂♀).

*Ero cambridgei* Thaler et al. [7]: page 360, figures 23-24, 28-29, 34-35, 60-61 (♂♀).

For a complete list of synonyms, see the World Spider Catalog [1].

**Determination.** Thaler et al. [7].

**Material examined.** Türkiye: • 1♂, Bursa Prov., Uludağ Mountain Range, Seferiışıklar-Göynükbelen area, 40°01'15"N, 29°06'10"E, 587 m, 07.05.2006 (R.S. Kaya).

**Diagnosis.** *Ero cambridgei* is closely related to *E. furcata* (Villers, 1789). The male of *E. cambridgei* differs from those *E. furcata* by having paracymbium basally without bipartite process (cf. with bipartite process, figure 22 in Thaler et al. [7]).

**Description.**

**Male.** Total length 1.90. Carapace 0.8 long and 0.8 wide. Abdomen 1.2 long 0.9 wide. Carapace yellowish-brown, cephalic region darker. Sternum yellowish-brown, with light median stripe and dark spots. Chelicerae dark brown. Legs brown, and leg joints with dark annulations. Abdomen globular and yellowish-brown, dorsum with darker spots posteriorly.

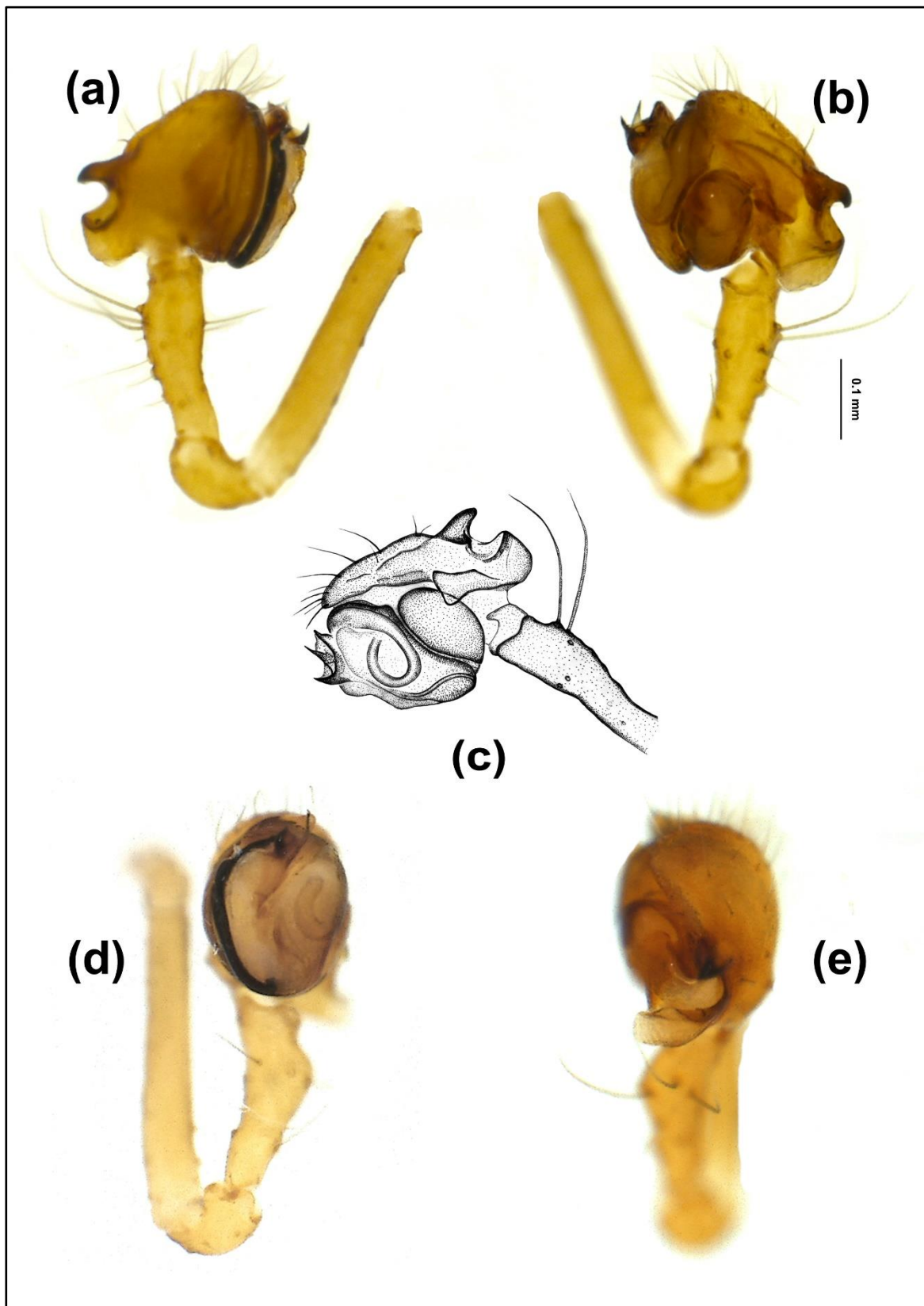
**Palp as in** Figures 2a–e; femur long, 1.5 times longer than tibia; tibia approximately 3 times longer than wide; cymbium oval, with finger-like slender proximal cybial extension; paracymbium rectangular with horizontal distal branch, basally not bipartite; subtegulum oval; tegulum rounded; conductor with prolateral furrow, its retrolateral tip slender and finger-like, ventral tip trapezoid; embolus strongly sclerotized, originating from the position at 6 o'clock and ending at between 11 and 12 o'clock.

**Note.** The dorsal extension of the cymbium, along with the other characteristics of the palp, fit well with those shown in figures 24 and 35 of Thaler et al. [7].

**Distribution.** From Canary Islands east to Maritime Prov. of Russia and Japan (Honsu), new to Türkiye [1].

**Comments.** There are three species of *Cyclosa* are collected in the studied area during the study period. These are *C. algerica*, *C. sierrae* and *C. conica*. When I was searching the webs of *Cyclosa* species, I noticed a small spider, *E. cambridgei*, in the orb-web of a female *C. algerica*.

The other mimetids collected in the Uludağ Mountain region by the author are *E. aphana* and *M. laevigatus*, but any hunting behavior was not observed on mentioned species during the study period.



**Figure 2.** Male palp of *Ero cambridgei*.  
(a) Prolateral view; (b, c) Retrolateral view; (d) Ventral view; (e) Dorsal view.

### 3.2. Family Araneidae Clerck, 1757

#### Genus *Cyclosa* Menge, 1866

##### *Cyclosa algerica* Simon, 1885

Figures 3a–c, 4a–c

*Cyclosa algerica* Levi [6]: page 79, figures 34–37(♂♀).

For a complete list of synonyms, see the World Spider Catalog [1].

**Determination.** Levi [6] and Marusik [8].

**Material examined.** Türkiye: • 2♂3♀, Bursa Prov., Uludağ Mountain Range, Seferiışıklar-Göynükbelen area, 40°01'15"N, 29°06'10"E, 587 m, 07.05.2006 (R.S. Kaya); • 1♂3♀, same locality, 27.05.2007 (R.S. Kaya); • 1♀, same locality, 05.05.2008 (R.S. Kaya); • 1♀, same locality, 10.05.2010 (R.S. Kaya); • 2♂1♀, Güneybudaklar Vill., 14.05.2006 (R.S. Kaya).

**Comparative material.** *Cyclosa sierrae*, Türkiye: • 2♂2♀, Bursa Prov., Uludağ Mountain Range, Kirazlı Vill., 15.06.2005 (R.S. Kaya).

**Diagnosis.** This species is most similar to *C. sierrae* by general habitus and shape of copulatory organs. The male differs by having broad (Figure 3a–b) and circular distal tip of median apophysis (vs. slender and conical, figure 3d–e), tooth of median apophysis short and triangular-shaped (vs. tooth long with strongly curved pointed tip, figure 3d–e). The female of *C. algerica* differs by having epigynal plate approximately as long as wide (vs. wider than long, figure 3f), medially with sclerotized lobe on each side (vs. posteriorly with sclerotized lobe on each side, figure 3f), epigynal scape wide (Figure 3c) and apically not tapering towards the end (vs. scape narrower and apically tapering towards the end, figure 3f).

#### **Description.**

**Male.** Total length 4.0. Carapace 2.0 long and 1.6 wide. Abdomen 1.9 long and 1.2 wide. Carapace dark brown to black. Chelicerae dark brown. Sternum dark brown to black with dark margin. Legs brown, with dark annulations. Abdomen with a single dorsal protuberance posteriorly, dorsum yellowish with dark brown median marking, venter dark brown with two light markings (Figure 4a).

**Palp as in** Figures 3a–b, 4b–c; patella with only one bristle; tibia short; cymbium rather flat, medially broad and apically prolonged; paracymbium short and finger-like; conductor sclerotized, flattened and large, about 1.6 times longer than wide in prolateral view; conductor lobe apically slightly curved; embolus filamentous, long and thin; median apophysis large and long, about 5.7 times longer than wide in retrolateral view, its distal tip broad and circular, tooth of median apophysis short and triangular-shaped.

**Female.** Total length 6.0. Carapace 1.9 long and 1.4 wide. Abdomen 4.1 long and 2.9 wide. As male, except for the lighter color in general habitus.

**Epigyne as in** Figure 3c; epigynal plate approximately as long as wide, medially with sclerotized lobe on each side; epigynal scape slightly wrinkled, approximately 5 times longer than wide, with parallel sides, scape not reaching the posterior margin of the median plate; anterior margin of the plate as wide as posterior margin.

**Habitat.** The specimens were collected from the webs. The locality open and dry area with shrub vegetation.

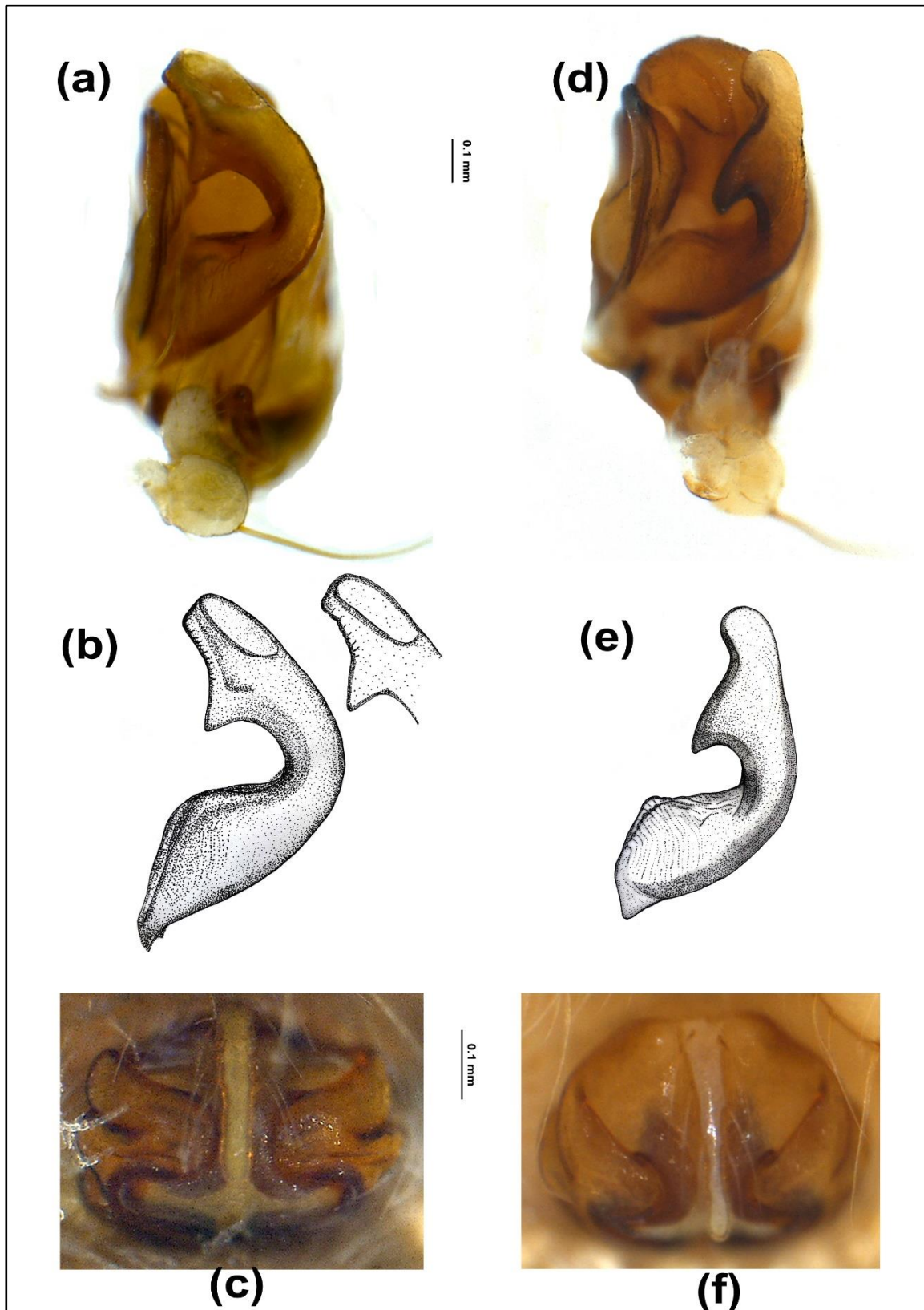
**Distribution.** Portugal, Spain, France, Algeria, Tunisia, Italy (Sicily), Greece, Türkiye, Azerbaijan, Iran [3].

**Comments.** The general appearance and shape of copulatory organs show that, *C. algerica* is very similar to other Mediterranean species *C. sierrae*. These similarities may have confused in the identification of the two species. Additionally, upon checking the record of *C. algerica* from Türkiye by Lecigne [5], it became evident that the figure of male palp presented by Lecigne [5] corresponds to the figure of *C. sierrae* palp presented by Levi [6] and Marusik [8], rather than to those of *C. algerica*.

The specimens reported in this study represent the northernmost record of the known zoogeographical range in Türkiye. This species was previously recorded in Antalya province in Türkiye [5]. It is distributed across the countries of the Mediterranean Basin. Its observation of Uludağ Mountain Range in the Marmara Region can be considered an interesting record in a zoogeographical perspective. However, the collection sites where these specimens were collected exhibit a Mediterranean climate and it is observed that the species is locally well distributed in the region. This new locality for the species suggests a preference for open and dry habitats.

Based on the present study and the studies by Kaya & Uğurtaş [11] and Marusik [8], the other Araneidae spider species that occurred in the Uludağ Mountain region include: *Aculepeira ceropegia* (Walckenaer, 1802), *Agalenatea redii* (Scopoli, 1763), *Araneus diadematus* Clerck, 1757, *Araniella alpica* (L. Koch, 1869), *A. cucurbitina* (Clerck, 1757), *Argiope bruennichi* (Scopoli, 1772), *Cercidia prominens* (Westring, 1851), *C. algerica*, *C. conica*, *C. sierrae*, *Gibbaranea bituberculata* (Walckenaer, 1802), *Glyptogona sextuberculata* (Keyserling, 1863), *Hypsosinga albobittata* (Westring, 1851), *Larinioides cornutus* (Clerck, 1757), *L. suspicax* (O. P.-Cambridge, 1876), *Leviellus stroemi* (Thorell, 1870), *Mangora acalypha* (Walckenaer, 1802), *Neoscona adianta* (Walckenaer, 1802), *Nuctenea umbratica* (Clerck, 1757), *Zilla diodia* (Walckenaer, 1802) and *Zygiella x-notata* (Clerck, 1757).





**Figure 3.** Copulatory organs of *Cyclosa algerica* (a - c) and *C. sierrae* (d - f).  
(a, d) Male palp, ventral view; (b, e) median apophysis, ventral view; (c, f) Epigyne, ventral view.



**Figure 4.** Male of *Cyclosa algerica*.

(a) General habitus, dorsal view; (b) Male palp, ventro-retrolateral view; (c) Male palp, ventro-prolateral view.

#### 4. DISCUSSION

This study reports *E. cambridgei* (Mimetidae) for the first time and confirms the occurrence of *C. algerica* (Araneidae) in Türkiye [1, 2]. The discovery of *E. cambridgei* in Uludağ Mountain range represents a significant addition to the spider fauna of Türkiye, marking the first record of this species in the country.

Additionally, the record of *C. algerica* from Uludağ Mountain range represents the northernmost known distribution point of this species in Türkiye.

*Ero cambridgei* and *C. algerica* are considered as rarely collected species in the collections [4]. The discovery of both species in the same habitat suggests that the Uludağ Mountain range may be an important area for many spider species. This underscores the need to conserve such habitats, which support biodiversity and provide environments where rarely or poorly known species can thrive. Future studies should focus on the ecological requirements of these spiders to gain a better understanding of their distribution and the factors contributing to their rarity.

The spider genus *Ero* is represented by only three species in Türkiye [2]. The addition of *E. cambridgei* to this list underscores the richness of Türkiye's spider fauna and the potential for further discoveries. The diverse microhabitats of the Uludağ Mountain range, shaped by its unique climatic and geographical features, likely play a crucial role in supporting these spider populations.



## ACKNOWLEDGEMENTS

The author would like to thank Prof. Dr. Gökay KAYNAK (Bursa Uludağ University, Department of Physics) and Prof. Dr. Özer YILMAZ (Bursa Uludağ University, Department of Biology) for allowing to use the Leica M205 C Stereomicroscope (Research Foundation of Bursa Uludağ University Project No: F-2005/4) and take the photographs.

## ETHICS COMMITTEE APPROVAL

Ethics committee approval is not required for this study.

## CONFLICT OF INTEREST

The author state that there is no conflict of interest regarding the publication of this article.

## CRedit AUTHOR STATEMENT

**Rahşen S. Kaya:** Investigation, Resources, Writing – Original draft, Writing – Review & Editing, Visualization, Conceptualization.

## REFERENCES

- [1] World Spider Catalog. Version 25.0. Natural History Museum Bern, online at <http://wsc.nmbe.ch>, accessed on {28.11.2024}.
- [2] Danişman T, Kunt KB, Özkütük RS, Coşar İ. The Checklist of the Spiders of Turkey. Version 2024. <http://www.spidersofturkey.info> [Accessed on 28.11.2024]
- [3] Benavides LR, Hormiga G. A morphological and combined phylogenetic analysis of pirate spiders (Araneae, Mimetidae): evolutionary relationships, taxonomy, and character evolution. *Invertbr Syst* 2020; 34(2): 144-191.
- [4] Nentwig W, Blick T, Bosmans R, Gloor D, Hänggi A, Kropf C. Spiders of Europe. Version 8.2024. <https://www.araneae.nmbe.ch> [accessed on 28.11.2024].
- [5] Lecigne S. A new species of *Sintula* (Linyphiidae), redescription of *Brigittea innocens* (Dictynidae) and eight spider species newly recorded for Turkey (Araneae). *Arachnol Mitt* 2021; 62: 11-34.
- [6] Levi HW. The American orb-weaver genera *Cyclosa*, *Metazygia* and *Eustala* north of Mexico (Araneae, Araneidae). *Bull Mus Com Zool* 1977; 148: 61-127.
- [7] Thaler K, Harten A van, Knoflach B. Pirate spiders of the genus *Ero* C.L. Koch from southern Europe, Yemen, and Ivory Coast, with two new species (Arachnida, Araneae, Mimetidae). *Denisia* 2004; 13: 359-368.
- [8] Marusik YM. Spiders (Araneae) new to the fauna of Turkey. 6. New species and genera records of Araneidae. *Turk J Arach* 2009; 2(4): 12-16.

- [9] Roberts MJ. The spiders of Great Britain and Ireland, Volume 1: Atypidae to Theridiosomatidae. Harley Books Colchester, England, 1985, 229 pp.
- [10] Roberts MJ. Collins Field Guide: Spiders of Britain & Northern Europe. Harper Collins, London, 1995, 383 pp.
- [11] Kaya R, Uğurtaş İH. The orb-weaver spiders (Araneae, Araneidae) of Uludağ mountain, Bursa. Turk J Arach 2008; 1(2): 160-165.