ID: 681

Comparison of Setae Morphology of Both Sexes of *Oxyopes ramosus* (Martini & Goeze, 1778) (Araneae, Oxyopidae)

Albulene EMİNİ[1*], Osman SEYYAR[2], Hakan DEMİR[2]

[1] Municipality of Ferizaj, Ferizaj, Republic of Kosovo
[2]Department of Biology, Science Faculty, Niğde University, 51200, Niğde, Türkiye
* albuleneemini@gmail.com

Abstract

In this study, setae morphology on the prosoma, opisthosoma and legs of male and female individuals of *Oxyopes ramosus* (Martini & Goeze, 1778) from the spider family Oxyopidae was determined by Scanning Electron Microscopy (SEM). It was seen that a scaly type setae, which is specific to the genus, was also present in this species, but this setae type showed slight differences in male and female individuals of this species. This is also the first study to compare the setae morphology in both sexes of *Oxyopes ramosus* (Martini & Goeze, 1778).

Key Words: *Oxyopes*, Setae morphology, Spider, Türkiye.

Introduction

Spiders are one of the most successful organisms in the arachnids (Arachnida) class of the arthropods (Arthropoda), adapted to terrestrial ecosystems. Most of the spiders, which are mostly adapted to terrestrial habitats, live on the ground, on or in the soil surface, in stony areas, rocky areas and on herbaceous or woody plants. Very few of them live on the edges and near the surface of fresh water. They are carnivorous creatures and with this feature, they show dominant feature in the ecosystem (Foelix, 2011). They usually feed on insects, but they can also eat each other. Since insects constitute the majority of their diet, they are used as biological control agents in agricultural ecosystems (Bayram and Allahverdi, 1999).

The outer part of the body of spiders consists of a hard layer of chitin and scleroprotiene, called the cuticle. The cuticle is covered with hair-like structures called setae, which fulfil various tasks. Setae are usually concentrated on the abdomen, but are also found on the prosoma, legs, palps and ducklings. The linear setae are usually associated with a receptor cell and act as sensory organs or mechanoreceptors, whereas the scale-like ones are not associated with any receptor cell and act only as a covering (Zakharov and Ovtsharenko, 2015).

Among all spider families, 13 families (Anyphaenidae, Araneidae, Corinnidae, Gnaphosidae, Heteropodidae, Liocranidae, Lycosidae, Oxyopidae, Philodromidae, Pisauridae, Salticidae, Thomisidae and Uloboridae) had at least one type of seta. Studies on the seta morphology of ground spiders revealed the presence of 10 different cover setae and it was stated that the diversity of these seta morphologies can be used in the classification of spiders at the genus and species level (Lehtinen, 1975).

The first aim of this study was to determine the seta morphology of *Oxyopes ramosus* belonging to the family Oxyopidae. The second aim of the study was to make a comparison of the morphological structures of the setae in male and female individuals of this species.

Materials and Methods

Materials

The male and female individuals of *Oxyopes ramosus* belonging to the family Oxyopidae used in this study were obtained from Niğde Ömer Halisdemir University Arachnological Museum (NOHUAM) (Figure 1).

Methods

The Electron Microscope in the Central Research Laboratory of Niğde Ömer Halisdemir University was used to determine the seta morphology of male and female individuals of Oxyopes ramosus. The prosoma, opisthosoma and legs of each individual were placed on staps and the surface of the specimens were coated with gold using a Sputter Coater (Cressingto Auto 108). Photographs were taken using EVO LS 10 ZEISS brand device (Figure 2).

Results and Discussion

The morphology of the setae on the prosoma, opisthosoma and segments of both sexes of *O. ramosus* (Martini & Goeze, 1778) belonging to the *Oxyopes* species of the Oxyopidae family was determined by SEM. The SEM photographs obtained are given below (Figures 3,4).

Figure 1. General Habitus of *Oxyopes ramosus* species

Figure 2. EVO LS 10 ZEISS brand SEM device

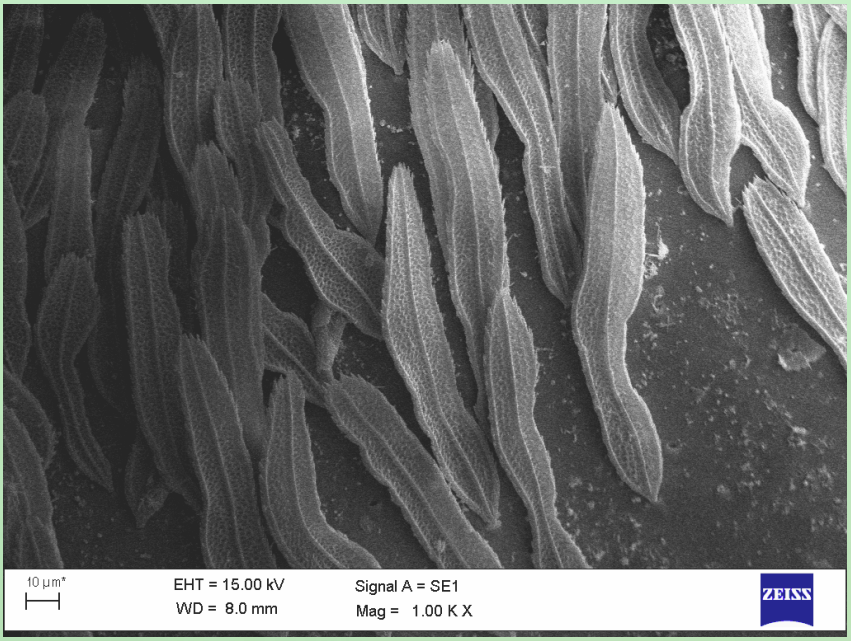

Figure 2. Setae of the female specimen of *Oxyopes ramosus* (Martini & Goeze, 1778)

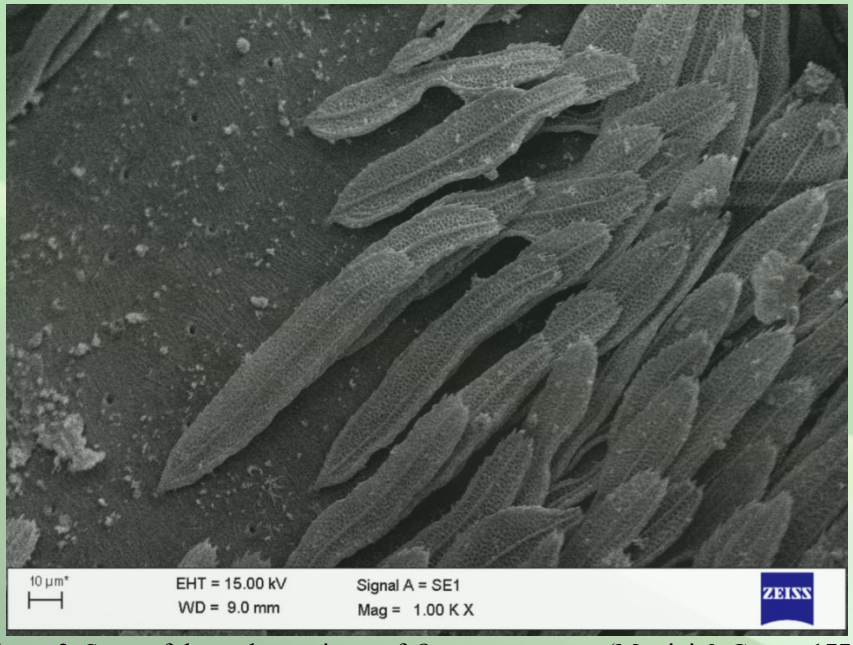

Figure 3. Setae of the male specimen of *Oxyopes ramosus* (Martini & Goeze, 1778)

The bodies of most lynx spiders are covered with cuticular structures called setae. These setae are more densely located on the dorsal and lateral parts of the prosoma and abdomen. It is thought that these setae covering the body have defense, heat regulation and communication functions. In lynx spiders, studies have been conducted on the seta morphologies of the *Oxyopes* and *Peucetia* genera so far (Townsend Jr and Felgenhauer, 2001). In the studies conducted, setae with a scaly morphology were observed in *Oxyopes aglossus* and *O. salticus*. Another genus belonging to the Oxyopidae family, the *P. viridans* species belonging to the *Peucetia* genus, had a hairy type seta morphology (Townsend Jr and Felgenhauer, 2001).

In Türkiye, the family Oxyopidae is represented by 2 genera and 7 species. One of these two genera, *Oxyopes*, is represented by subspecies, these are *Oxyopes globifer* Simon, 1876, O. heterophthalmus (Latreille, 1804), *O. lineatus* Latreille, 1806, *O. nigripalpis* Kulczyński, 1891, *O. pigmentatus* Simon, 1890 and *O. ramosus* (Martini & Goeze, 1778) (Danışman et al., 2023). Among these species, in this study, SEM photographs were made on both male and female individuals of *O. ramosus* (Martini & Goeze, 1778).

According to the literature, the seta morphology of six *Oxyopes* species has been studied so far and all of them have the same morphological type of scaly setae. This *Oxyopes* genus-specific scaly seta type shows marginal and apical spines with a single shaft and abundant plicae Townsend and Felgenhauer, 2001). In this study, SEM photographs of both male and female individuals of *O. ramosus* (Martini & Goeze, 1778) showed that although the seta morphology of the male and female were largely similar, there were differences in the apical spines of the seta (Figure 4).

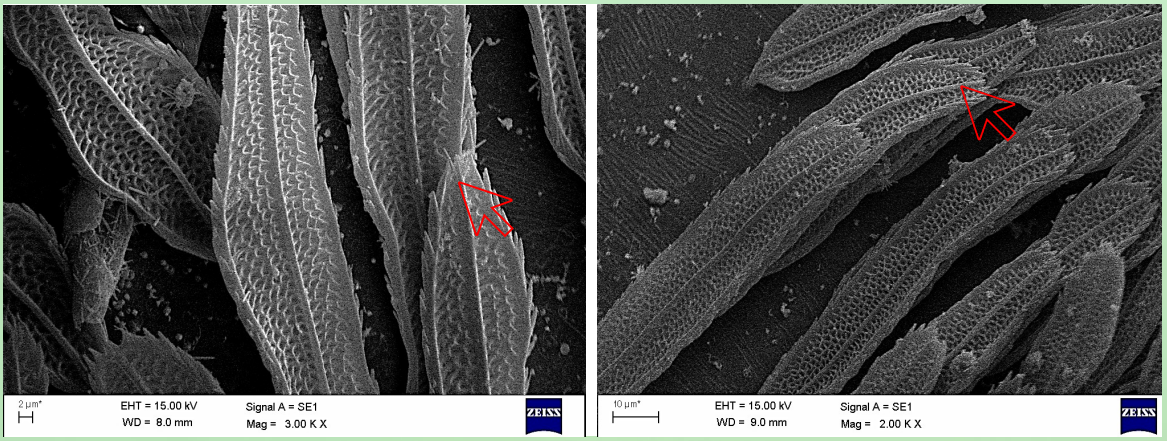

Figure 4. Differences in seta morphology in males and females of *O. ramosus*

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