Acta Biologica Turcica, 34(4), 211-214, 2021 Received 06 Jun. 2021; Accepted 05 Aug. 2021; Published Online 08 Aug. 2021

ACTA BIOLOGICA TURCICA

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E-ISSN: 2458-7893, http://www.actabiologicaturcica.com

Research article

A rare species of *Nothrotrombidium* mite (Acari: Trombellidae) from Turkey

Evren BUĞA[1], Sevgi SEVSAY[2,*]

[1]İliç Dursun Yıldırım Vocational School, Medical Laboratory Techniques Program, Erzincan Binali Yıldırım University, Turkey

[2]Biology Department, Sciences and Arts Faculty, Erzincan Binali Yıldırım University, Turkey

*Corresponding author email: ssevsay@erzincan.edu.tr

Abstract: *Nothrotrombidium otiorum* (Berlese, 1902), last given in 1966 by Robaux, has been redescribed from the postlarval stage from Tunceli Province, Turkey, and compared with the previous specimens given from Europe. The family Trombellidae Thor, 1935 is reported for the first time from Turkey.

Keywords: New record, *Nothrotrombidium*, Parasitengona, Trombidiformes.

Citing: Buğa, E. & Sevsay, S. (2021). A rare species of *Nothrotrombidium* mite (Acari: Trombellidae) from Turkey. *Acta Biologica Turcica,* 34(4), 211-214.

Introduction

Parasitengona constitutes one of the most diverse, globally distributed groups of mites, with a complex life cycle involving the alternation of active and inactive instars. Trombellidae Thor, 1935 consists of 20 genera (Mąkol and Wohltmann 2012). The genus *Nothrotrombidium* belonging to this family comprises nine species, of them, six species are known exclusively from postlarval forms, two from larvae, and one from both forms (Mąkol and Wohltmann 2012; Noei 2017). Such species as *Nothrotrombidium bulbiferum* (Willmann, 1940), *N. otiorum* (Berlese, 1902) and *N. treati* Southcott, 1987, which occur in the humid warm temperate zone of the Northern Hemisphere, are probably relics there especially *N. otiorum*, a rare species widely distributed in Europe (Roboux 1966; Konikiewicz and Mąkol 2018). Members of this genus live in moss, leaves, and rotten tree stumps and on the soil surface (Feider, 1955).

This study includes detailed descriptions based on postlarvae (one of which is female) of *N. otiorum* collected from dried moss. We aimed to contribute to the knowledge of mites present in Turkey by re-describing this rare species that was given about fifty-five years ago.

Materials and methods

Specimens (one female and two postlarvae) were collected on 30 May 2019 in meadow a field in the Pülümür Valley, Tunceli (N 39° 29' 54", E 39° 52' 38", 1491 m a.s.l., leg. E. Buğa and M. Aydemir). It was determined to be a female because eggs were observed during preparation. The other two specimens were considered postlarvae. The specimens were collected from dried moss on *Populus* sp. by using Berlese funnels. For light microscope studies, the specimens were mounted on slides using Hoyer's medium (Walter & Krantz 2009) after preservation in ethyl alcohol (%70). Measurements and images were taken with an Olympus BX63 DIC microscope with differential interference contrast and phase contrast capabilities. The terminology and abbreviations used follow Feider (1955) and Robaux (1966). All measurements are given in micrometer (µm). The materials are deposited in the Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Turkey (EBYU).

Results

Systematics

Family	Trombellidae Thor, 1935
Subfamily	Trombellinae Thor, 1935
Genus	*Nothrotrombidium* Womersley, 1954
Type species	*Trombella otiorum* Berlese, 1902

Nothrotrombidium otiorum (Berlese, 1902)

***Female*:** Body length 1920, width 1090. Medial face of palp tibia (Fig. 1a) with two often overlapping ctenidia.

Distal ctenidium quite thick 6 spinisetae, proximal ctenidium thinner 6 uniform spinisetae; lateral face of palp tibia covered with numerous strong and long spine-like setae (13-25). Palp tarsus cylindrical, including numerous eupathidia and two solenidia. Aspidosoma (Fig. 1b) clearly delimited, triangular in outline. Crista metopica absent; sensillary area located in the posterior part of aspidosoma (Fig. 1c). Eyes set on very short stalks, each eye composed of two lenses. Anterior lenses much larger than posterior lenses (Fig. 1 d). Idiosoma covered with smooth setae (unilateral, with fine barbs) and set on distinctly elongated papillae (setae 30-36 μm, papillae 11-15 μm) (Fig 2a). Idiosoma cuticle with network structure (Fig. 2b). Genital opening surrounded by paired sclerites. The papillae of the setae on the epivalve very long (setae 20-24 μm, papillae 20-34 μm) (Fig 3a). Posterior of the epivalve with a pair of oval and strongly sclerotized structures (Fig 3b). Tarsus I elongated, and at least 1.5 times longer than Tibia I.

Distribution

Austria, France, Italy, Norway, Romania, Sardinia, Spain (Mąkol and Wohltmann, 2012). New for the Turkish fauna.

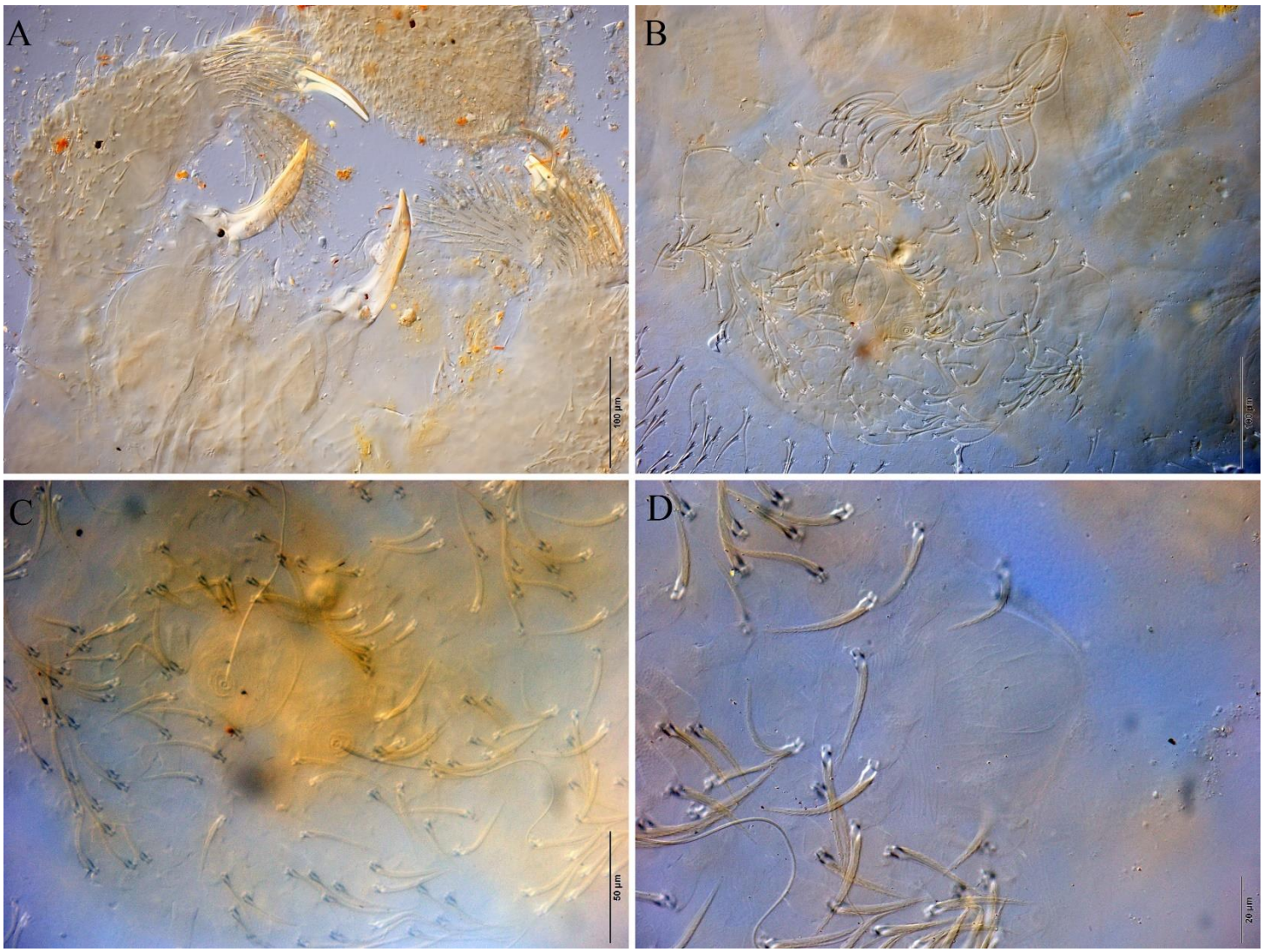

Figure 1. *Nothrotrombidium otiorum* (female), A) palp medial aspect, B) Aspidosoma region, C) Sensillary area, D) Lenses of eye

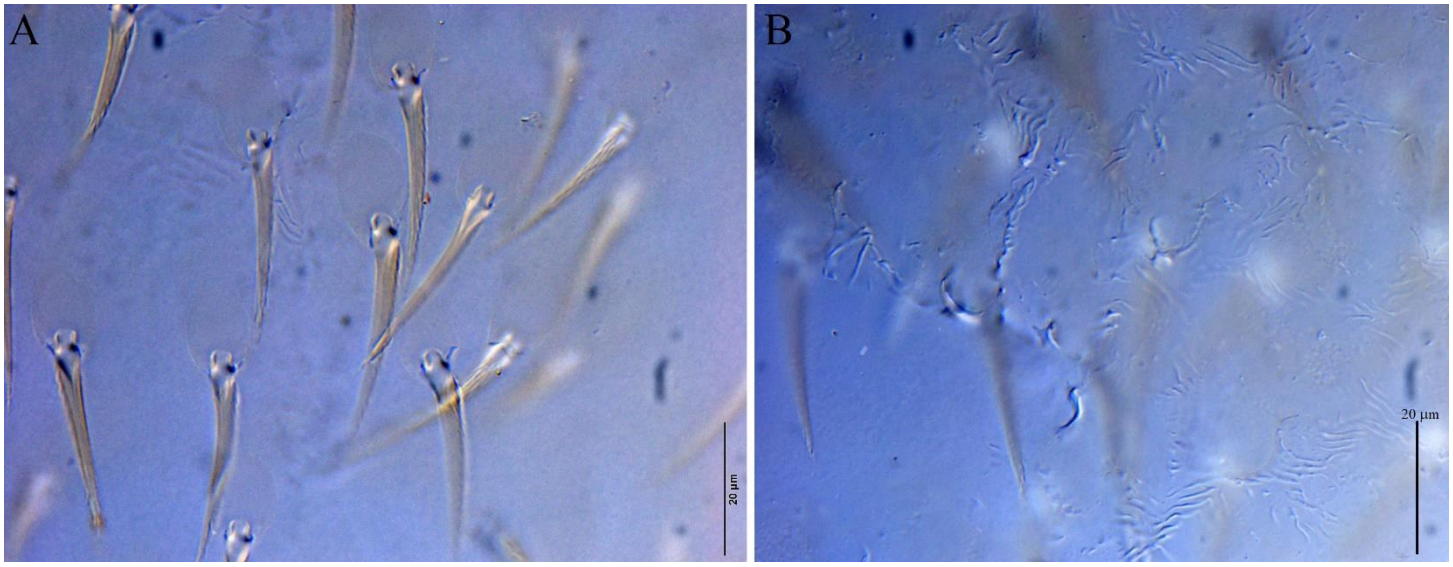

Figure 2. *Nothrotrombidium otiorum* (female), A) dorsal opisthosomal setae (pDS), B) Idiosoma cuticle

Figure 3. *Nothrotrombidium otiorum* (female), A) papillae of the setae on the epivalve, B) Sclerotized structure on epivalve, C) Recess in the middle of the epivalve

Discussion

Womersley (1954) reviewed the subfamily Trombellinae Thor, 1935 and erected the genus *Nothrotrombidium* for *Trombella otiorum* Berlese 1902, from Europe (Southcott 1987). *Nothrotrombidium otiorum*, last reported by Roboux in 1966, is a very rare species (Robaux, 1966). This species was first given from Florence, Italy (Berlese 1902). Trombidiformes fauna of Italy and Turkey are similar. The genus *Emitrombidium*, which was given from Rome, Italy in 1949, was reported for the second time in 2014 from Turkey (Mąkol and Sevsay 2014). These data increase the probability that the species that were given years ago will come out of Turkey. Defining species distribution on the basis of the variable topography and climate of Anatolia is especially importance for understanding of contemporary biodiversity and developing conservation strategies (Çıplak 2003).

Robaux (1966) compared the data for specimens of *N. otorium* previously reported by Berlese (1902), Andre (1926) and Feider (1958) (Table). In this article, the measurements of the nymphal stages of this species from a very small number of specimens are also given. Of the three specimens we examined one contained egg, we were able to evaluate it as female. Since we could not clearly see the papillae in the genital structure of the other samples, we considered them to be postlarvae. The Turkish and European specimens are generally similar to each other in terms of morphological measurements. However, since the earlier articles did not provide information about the papillae of the setae, we could not compare them. Also, Feider (1958) mentioned that there is a recess in the middle of the epivalve, and Robaux (1966) showed this in detail. This recess was also seen in our samples (Fig. 3 c).

Table. Comparison of morphological measuremens given by Robaux (1966) with Turkish specimens of *Nothrotrombidium otiorum*.

	Berlese (1902)	Andre (1926)	Feider (1958)	Robaux (1966)	Turkish specimens	
				Female(=2), male (=1)	Female(=1)	Postlarvae(=2)
L	2000	1890	2000	1170-1825	1920	1850-1900
W	1000	1010	1000	690-1055	1090	1000-1050
TaI L	520	560	490	350-508	477	468-475
TaI W	170	150	130	140-175	166	158-160
TiI L	290	340	-	190-305	250	235-240
PaTi Ctenidium	12	12	-	10	12	11-12
pDS	-	-	29	18-47	30-36	28-35

Acknowledgements

This study was part of the first author's Ph.D. thesis. The authors also thank Dr. Gregory T. Sullivan of the School of Biological Sciences at the University of Queensland in Brisbane, Australia for the language editing of an earlier version of this manuscript.

Ethical Approval

The authors declare that no need to ethical approval.

Conflicts of Interest

The authors declare that they have no conflict of interest.

Funding Statement

This study, which was supported by the Scientific and Technological Research Council of Turkey (TÜBİTAK project number: 217Z184).

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