



First record of the genus *Rhinothrombium* (Trombidiformes: Tanaupodidae) from Türkiye: *Rhinothrombium nemoricola* (Berlese)

Alper TORUNLAR¹ , Evren BUĞA² , Sevgi SEVSAY^{3,4} 

¹Department of Biology, Graduate School of Natural and Applied Sciences, Erzincan Binali Yıldırım University, Türkiye

²Medical Laboratory Techniques Program, İliç Dursun Yıldırım Vocational School, Erzincan Binali Yıldırım University, Türkiye

³Department of Biology, Faculty of Sciences and Arts, Erzincan Binali Yıldırım University, Türkiye

⁴Corresponding author: ssevsay@erzincan.edu.tr

Received: 27 June 2023

Accepted: 27 July 2023

Available online: 31 July 2023

ABSTRACT: The genus *Rhinothrombium* (Tanaupodidae) is represented in the world by three species: *R. nemoricola* (Berlese, 1886), *R. inopinum* Hull, 1918 and *R. wuxiensis* Zhang, 1993. In this study, morphological characters, micrographs of various organs and distribution of postlarval forms of *R. nemoricola* are given. This is the first record of the genus *Rhinothrombium* from Türkiye.

Keywords: Acari, biodiversity, distribution, first record, Parasitengonina.

Zoobank: <https://zoobank.org/A3C86D4A-DF8D-4ABA-AB8C-22FE5FE20696>

INTRODUCTION

Tanaupodidae Thor, 1935 comprise nine genera: two fossil (*Atanaupodus* Judson and Mağol, 2009, *Propolyssenia* Mağol, Konikiewicz and Klug, 2018) and seven extant (*Eothrombium* Berlese, 1910, *Lassenia* Newell, 1957, *Neotanaupodus* Garman, 1925, *Polydiscia* Methlagl, 1928, *Rhinothrombium* Berlese, 1910, *Tanaupodus* Haller, 1882, and *Tignya* Oudemans, 1937) (Mağol and Featherstone, 2021). Members of the family are mainly distributed in the Palaearctic region, where they are found in decomposing organic matter and soil. The fauna of Türkiye represents only two known tanaupodid species; *Lassenia hemsinensis* Noei, Saboori and Çobanoğlu, 2018 and *Eothrombium siculum* Berlese, 1910 (Sevsay, 2017; Noei et al., 2018; Karakurt and Sevsay, 2020). The genus *Rhinothrombium* has the fewest species in the family and includes three species: *R. nemoricola* (Berlese, 1886), *R. inopinum* Hull, 1918, and *R. wuxiensis* Zhang, 1993 (Mağol and Wohltmann, 2012). *Rhinothrombium* can be easily identified by the following characteristics: Scutum with naso, and idiosoma cuticle striate (Zhang, 1993). We here introduce a new record to contribute to the knowledge to mite diversity of Türkiye.

MATERIALS AND METHODS

Mite specimens were collected from Erzincan and Tunceli provinces of Eastern Türkiye. The specimens were extracted by Berlese-Tullgren funnels. The examined materials were preserved in 70% ethanol and cleared in 9% KOH. Specimens for microscope studies were fixed on slides in Hoyer's medium (Walter and Krantz, 2009). The morphological terminology follows those of Mağol (2007) and Saboori et al. (2009). For measurements and micrographs an Olympus BX63 and Leica 3000 microscope were used. Micrometers (µm) is used for all measurements. The slides are deposited in the Acarology Laboratory of Erzincan Binali Yıldırım University, Erzincan, Türkiye (EBYU).

RESULTS

Family: Tanaupodidae Thor, 1835

Genus: *Rhinothrombium* Berlese, 1910

***Rhinothrombium nemoricola* (Berlese, 1886)**

Larva. Unknown.

Adult (n=2): Colouration reddish to brown. Idiosoma slightly elongate, length 1553-1650 and width 989-1075.

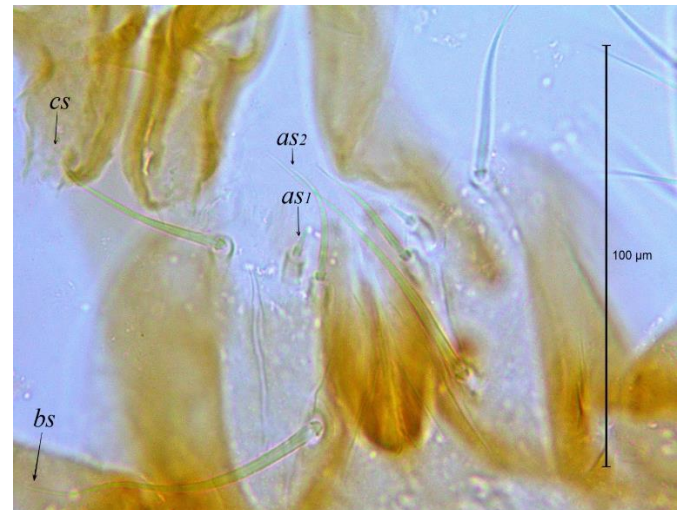


Figure 1. *Rhinothrombium nemoricola* (adult). Ventral view of gnathosoma.

One pair of nude galealae (*cs*, 47-49), two pairs of nude anterior hypostomalae (*as*₁, 10-12 and *as*₂, 30-34), one pair of nude subcapitular setae (*bs*, 58-72), *bs* longer than *cs* (Fig. 1). Cheliceral blade serrated along the inner edge. Palp tarsus slightly narrowing towards the end, rounded distally and extending behind the termination of palp tibial claw, covered with numerous solenidia at the top (Fig. 2A).

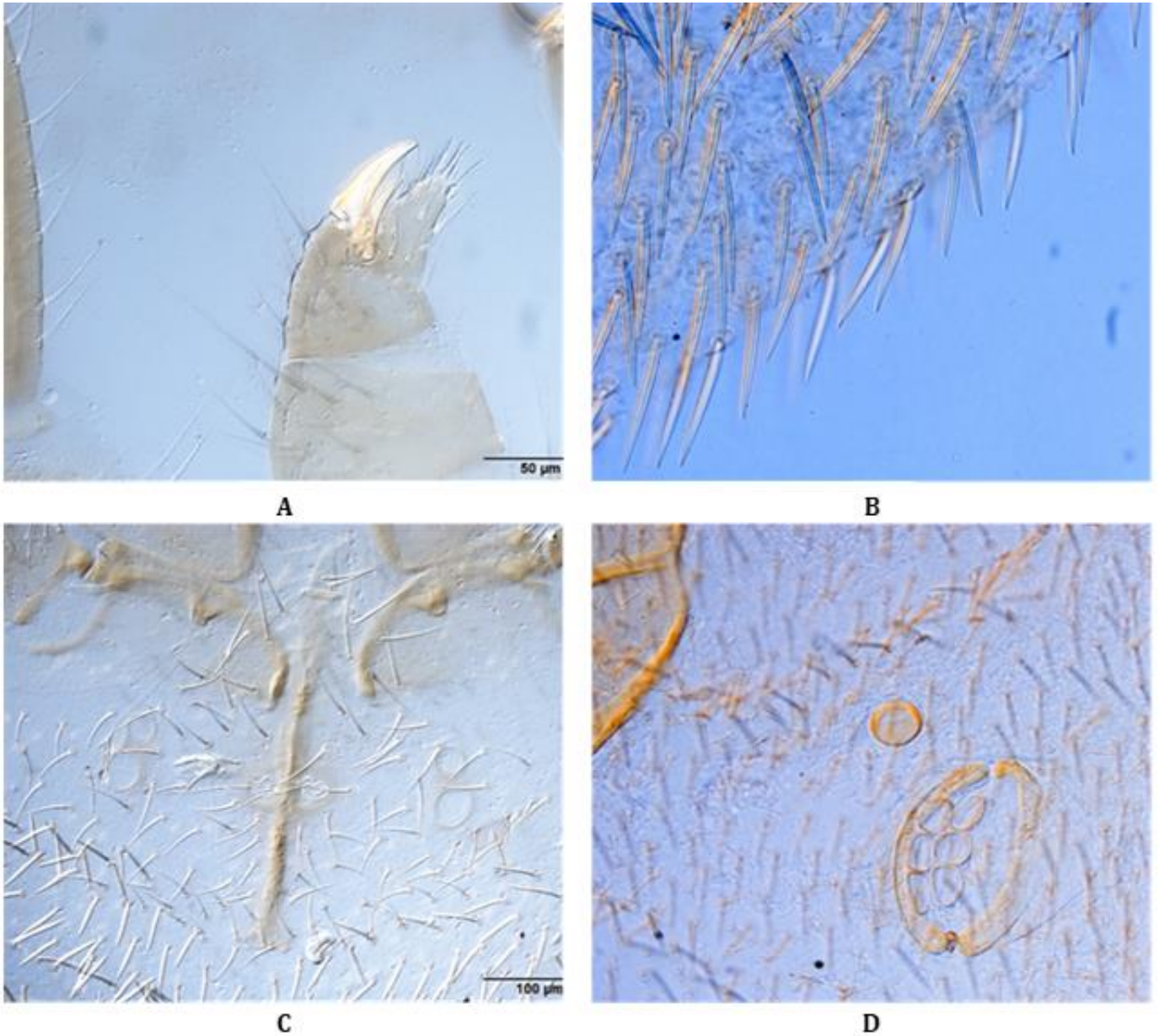


Figure 2. *Rhinotrombium nemoricola* (adult). A) Palp tarsus, B) Posterior dorsal idiosomal setae, C) Crista metopica, D) An unpaired sclerite in front of the genital opening.

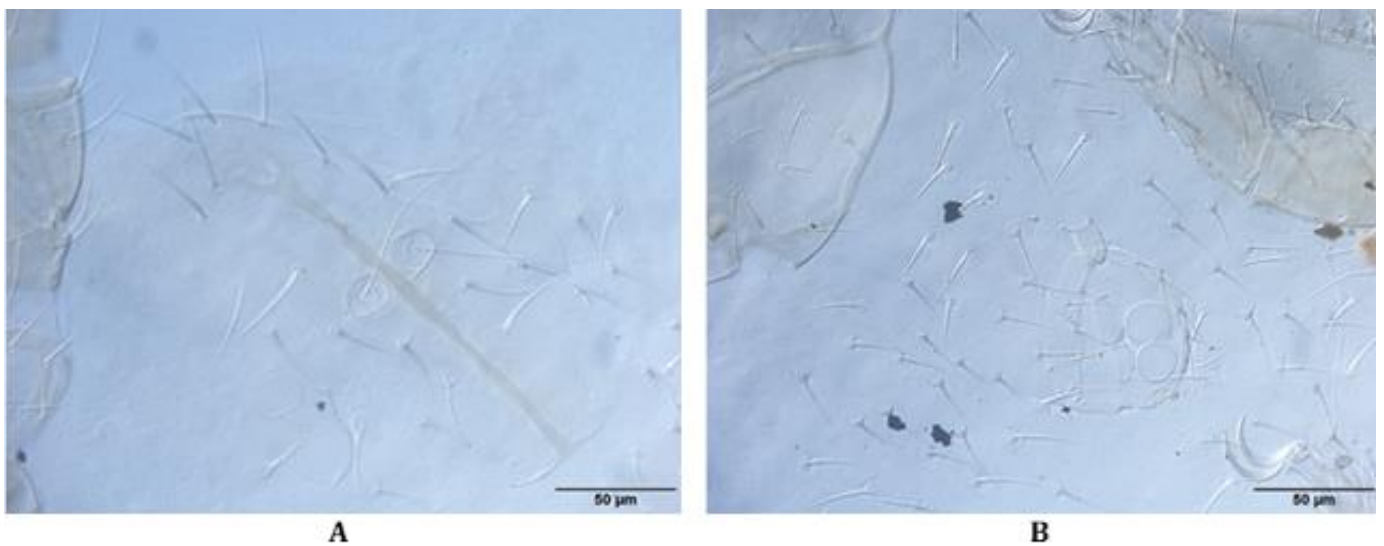


Figure 3. *Rhinotrombium nemoricola* (deutonymph). A) Crista metopica, B) The genital opening.

Table 1. Leg measurements.

	Adult-1	Adult-2	Deutonymph
Leg I			
Ta_I (L/W)	310/150	284/147	147/72
Ti_I	225	214	102
Ge_I	183	163	86
Tf_I	156	145	72
Bf_I	164	157	47
Tr_I	96	68	35
Cx_I	179	175	100
Leg II			
Ta_II	215	192	92
Ti_II	134	127	58
Ge_II	115	98	47
Tf_II	95	88	45
Bf_II	96	94	48
Tr_II	71	63	35
Cx_II	198	181	87
Leg III			
Ta_III	208	198	90
Ti_III	163	133	59
Ge_III	124	100	43
Tf_III	103	88	37
Bf_III	99	86	40
Tr_III	102	89	47
Cx_III	172	164	89
Leg IV			
Ta_IV	272	247	119
Ti_IV	250	236	100
Ge_IV	173	181	68
Tf_IV	139	153	44
Bf_IV	113	110	48
Tr_IV	154	136	49
Cx_IV	217	229	98
IP	4424	4199	1935

Dorsal opisthosomal setae simple (49-66), uniform, slightly thickened stem, narrowing towards tip, spine-like, without setulose, inserted on prominent sclerites (Fig. 2B). Crista metopica strongly sclerotized. The border of the anterior region of the crista metopica not clear. Scutum with projecting naso (45-52) with two setae. Posterior region prominent (113-117) shorter than anterior region (132-135). Two pairs of sessile eyes laterally to crista metopica on ocular sclerites. Anterior lenses (20-26) shorter than posterior lenses (30-35). Middle part of crista widened at the level of sensillary area. Sensillae smooth (125-137) (Fig. 2C). Genital opening at level of coxae IV with three pairs of acetabulae, surrounded by paired sclerites of similar shape. Anterior to genital opening an unpaired round sclerite (Fig. 2D).

Legs stout, shorter than idiosoma. Tarsus I oval in shape. All tarsi terminated with double claws. The length of the leg segments are given in Table 1.

Deutonymph (n=1): Body smaller than adult. Idiosoma length 902 and width 595. Other characters as in adults. Gnathosoma. One pair of nude galealae (*cs*, 23), two pairs of nude anterior hypostomatae (*as*₁, 8 and *as*₂, 23), one pair

of nude subcapitular setae (*bs*, 38). Palps not as robust as in adults. Dorsal opisthosomal setae similar to those in adults but shorter (35-42) (Fig. 3A). Two pairs of genital acetabula present (Fig. 3 B).

Specimens examined

Esenyurt Village, Üzümlü district, Erzincan, Türkiye 39°38'28"N 40°03'19"E, 2007 m a.s.l., 11 October 2021, one adult and one deutonymph from mossy soil (Leg. A. Torunlar). Mutu district, Tunceli, Türkiye, 39°32'41"N 39°54'40"E, 1511 m a.s.l., 29 July 2018, one adult from moss on stone (Leg. E. Buğa). The adults were kept in the glass vials, but no larvae were observed.

DISCUSSION

Two genera of the family Tanaupodidae are known from Türkiye: The genus *Eothrombium*; *E. siculum* Berlese 1910 and the genus *Lassenia*; *L. novoseljensis* Haitlinger and Šundić from Aydın and *L. hemsinensis* Noei et al. from Rize (Noei et al., 2018; Oner et al., 2021). In our country, the first record of the genus *Rhinothrombium* is given. All species of

Rhinotrombium are rather rare, their biology remains almost unknown. *Rhinotrombium* is exclusively known from mountainous areas. The specimens obtained in this study are grassy, moss, litter plain areas. Species of *Tanaupodus* inhabit lowlands and seem confined to hygic biotopes (Wohltmann et al., 2007). Members of the family were known only from Europe (Berlese 1887) until found in Iran (Yazdanpanah et al., 2013). Three species of the genus *Rhinotrombium* are known to date:

Rhinotrombium inopinum Hull, 1918 [Postlarvae]

Distribution: Great Britain (Mağol and Wohltmann, 2012).

Rhinotrombium nemoricola (Berlese, 1886) [Postlarvae]

Distribution; Austria, France, Germany, Great Britain, Hungary, Italy, Norway, Poland, Romania, Spain (Mağol and Wohltmann, 2012). It is newly recorded species for fauna of Türkiye.

Rhinotrombium wuxiensis Zhang, 1993 [Postlarvae]

Distribution: China (Mağol and Wohltmann, 2012).

Karakurt (2016) gave some of specimens as *Rhinotrombium nemoricola* in his PhD thesis and later this species was published as *Eothrombium siculum* due to the structure of the anterior part of the crista (Karakurt, 2016; Karakurt and Sevsay, 2020). The members of *Eothrombium* separate from other postlarval of *Rhinotrombium* by the shape of the anterior part of crista. While end of anterior part of crista is bifurcate in *Eothrombium*, it is linear in *Rhinotrombium*. Also, naso is absent in *Eothrombium* while *Rhinotrombium* has naso.

The knowledge of the systematics and biology of the group tanaupodids is still fragmentary, and is caused mainly by the rarity of occurrence of these mites, and the consequent limited material that has been published about them (Mağol and Featherstone, 2021). The number of individuals in two sexes is very low. As specimens number of both deutonymph and adult stages increases, the differences between them will be more understandable.

Authors' contributions

Alper Torunlar and **Evren Buğa**: Methodology, investigation, visualization, writing - review & editing. **Sevgi Sevsay**: Supervision, project administration, resources, investigation, methodology, writing - review & editing. This study is a part of the first author's MSc thesis.

Statement of ethics approval

Not applicable.

Funding

This work was mainly funded by a scientific research project (FYL-2022-837), supported by Scientific Research Projects Coordination Unit of Erzincan Binali Yıldırım University (EBYU).

Conflict of interest

All authors declare that there is no any potential conflict of interest.

Acknowledgements

This study was presented as a short summary at 1st International Symposium of Biodiversity Studies, May 23-25, 2022, Ankara, Türkiye. We thank EBYU for their financial support. Also, we are grateful to anonymous reviewers for their useful comments on the manuscript.

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- Edited by: Sebahat K. Ozman-Sullivan
Reviewed by: Two anonymous referees

Citation: Torunlar, A., Buğa, E. and Sevsay, S. 2023. First record of the genus *Rhinothrombium* (Trombidiformes: Tanaupodidae) from Türkiye: *Rhinothrombium nemoricola* (Berlese). *Acarological Studies*, 5 (2): 94-98.