

ACTA BIOLOGICA TURCICA

© 1950-1978 Biologi, Türk Biologi Dergisi, Türk Biyoloji Dergisi, Acta Biologica

E-ISSN: 2458-7893, http://www.actabiologicturcica.info

Neoliodid (Acari: Oribatida) species of Şamlar forest, İstanbul

Aynur SEVİMLİ, Şule BARAN*

Department of Biology, Faculty of Arts and Sciences, Sakarya University, 54187 Sakarya, Turkey.

*Corresponding author: sbaran@sakarya.edu.tr

Abstract: The present study is based on neoliodid mite (Acari, Oribatida) specimens collected from Şamlar forest, İstanbul. Redescription and SEM images of two oribatid mite species belonging to family Neoliodidae are given. While *Poroliodes farinosus* (Koch, 1839) was previously known from Turkey, *Neoliodes ionicus* Sellnick, 1931 is recorded for the first time in Turkey.

Keywords: Acari, Oribatida, Neoliodidae, Poroliodes, Neoliodes, Şamlar forest, Turkey.

Introduction

Most of the oribatid mites are members of soil fauna. They are free living organisms, none of them are parasite. The roles of oribatid mites in soil can be grouped under four headings, including (1) mechanically breaking down organic materials and fragmentation, (2) physical and chemical changes of organic substances by digestive functions, (3) production of fecal pellets which is an extremely productive environment for root growth and seed germination, and (4) helping the distribution of bacterial and fungal spores and microfloral activity stimulation by carrying them on their body surface and digestive systems.

Family Neoliodidae comprises four genera, fifty-one species and one subspecies having a cosmopolitan distribution (Subías, 2004, updated 2015). The generic characters of the family are genital plates with transverse suture, large body size and 4 or 5 pairs of notogastral setae (Balogh and Balogh, 1992; Perez-Inigo, 1997; Weigmann, 2006).

The aims of the present paper are to identify the neoliodid species collected from Şamlar forest, İstanbul and to redescribe and illustrate them.

Materials and Methods

Mites were extracted by a Tullgren funnel apparatus from the soil samples collected from Şamlar forest in Başakşehir district of İstanbul Province. They were fixed and stored in 70% ethanol. Mites were sorted from the samples under a stereomicroscope (Olympus SZX51) and

mounted on slides in modified Hoyer's medium or 35% lactic acid. All measurements are given in micrometers (μm).

The terminology used in this paper follows Travé and Vachon (1975). Examined materials are deposited in the Acarological Collection of the second author, Sakarya University, Sakarya, Turkey.

Results

Poroliodes farinosus (Koch, 1839)

Material Examined: 1 specimen, collected from grassy soil under *Pinus* sp., Şamlar forest in Başakşehir district of İstanbul Province, Turkey, 41°82'N, 28°45'E, 07.10.2014.

Measurements: Body length 1052, width 642 and sensillus 84.

Prodorsum (Figs. 1A, B): Prodorsum triangular, rostrum widely rounded. Prodorsal integument with reticulation. Sensillus with a short stem and flattened blunt head widening apically.

Notogaster (Figs. 1A, C): Convex, triangular at posterior end, dorsally covered with scalps of juveniles. The surface of notogaster with wavy foldings and on the edges with fine pores. Anterior border of notogaster nearly straight. Five pairs of notogastral setae present. *h1* and *h2* lanceolate; *p1*, *p2* and *p3* simple.

Venter (Figs. 1D, 2A, B): Integument with ridge-shaped thickenings. Anal and genital plates large and very close to each other. Two pairs of simple fine anal setae and three pairs of adanal setae present. Genital plates with seven

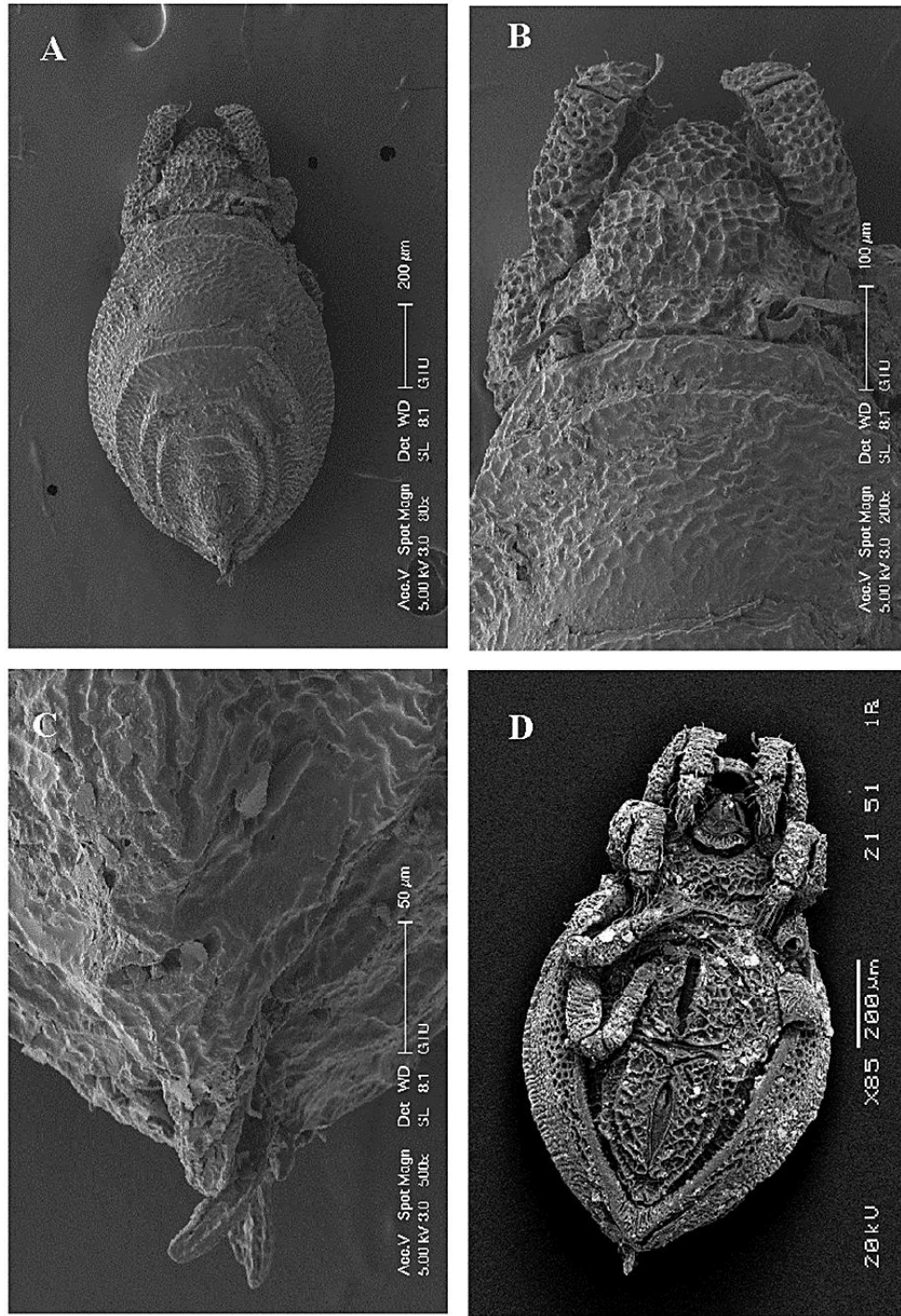


Figure 1. *Poroliodes farinosus*. SEM images: (A) Dorsal view of adult, (B) prodorsal and antero-notogastral region, (C) notogastral setae *p1* and (D) ventral view of adult.

pairs of setae (5+2). One pair of aggenital setae present.

Remarks: *Poroliodes* is a monospecific genus with type species *Poroliodes farinosus* and distributed in Oriental and Palearctic regions.

This is the second record of *Poroliodes farinosus* from Turkey. Previously it was recorded from Uzunoluk forest

in Erzurum Province of Turkey by Yalçın et al. (2013).

Body dimensions were given as 1080/600 by Willman (1931); 1056-1090/660-680 by Perez- Inigo (1997), 1000-1100 by Weigmann (2006) and 960/530 by Yalçın et al. (2013). The body dimensions of our samples are 1052/642 and in accordance with previously studied specimens.

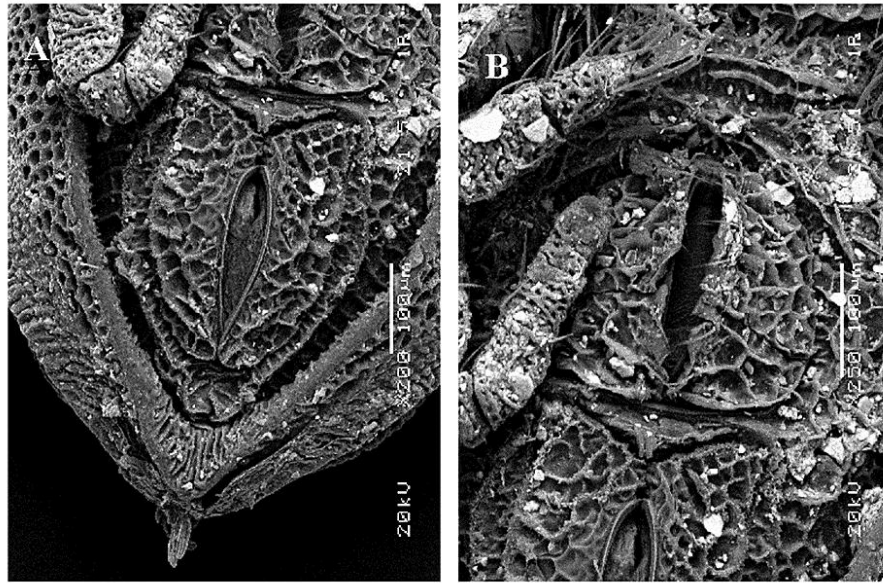


Figure 2. *Poroliodes farinosus*. SEM images: (A) anal plate and (B) genital plate.

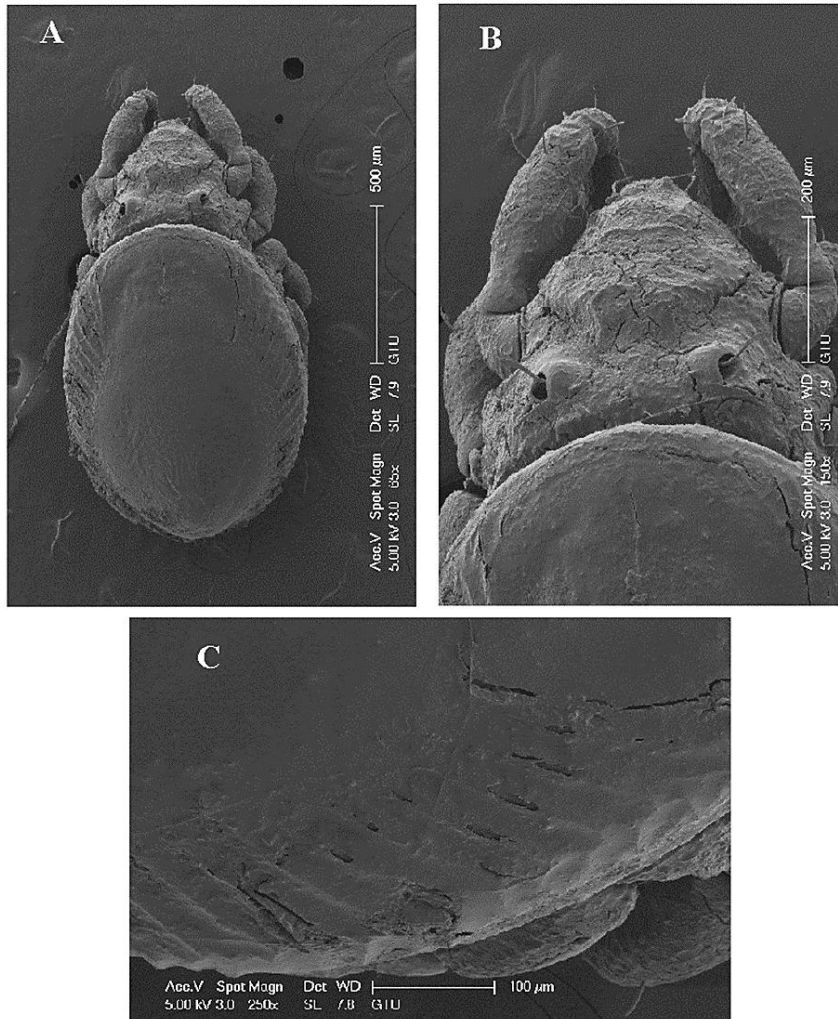


Figure 3. *Neoliodes ionicus*. SEM images: (A) Dorsal view of adult, (B) prodorsal and antero-notogastral region and (C) lateral region of notogaster with radially arranged lines.

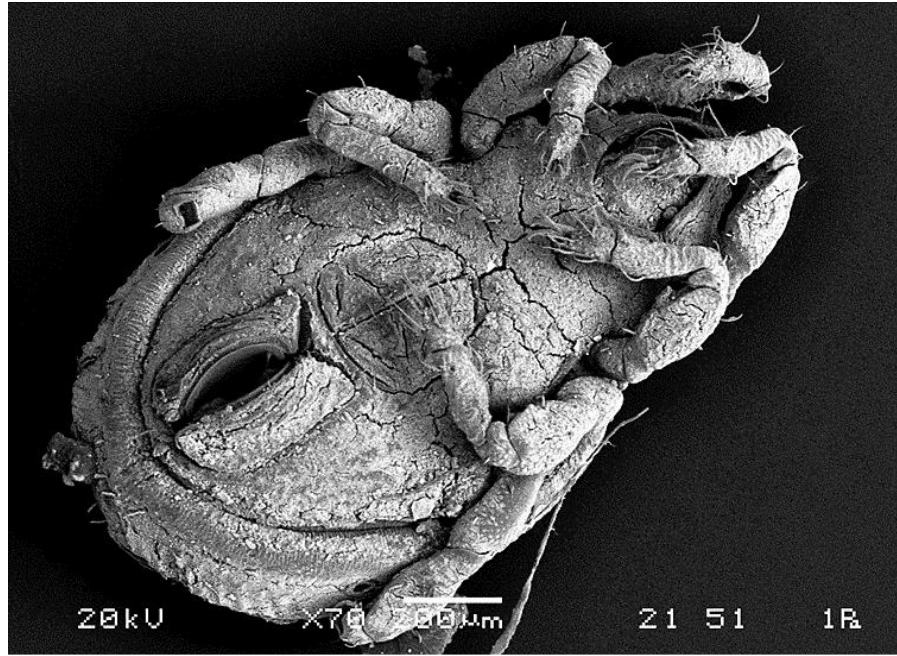


Figure 4. *Neoliodes ionicus* SEM images, ventral view of adult.

Neoliodes ionicus Sellnick, 1931

Material Examined: 3 specimens, collected from grassy soil under *Pinus* sp., Şamlar forest in Başakşehir district of İstanbul Province, Turkey, 41°82'N, 28°45'E, 07.10.2014.

Measurements: Body length 1330-1336, width 861-869 and ss 78-80.

Prodorsum (Figs. 3A, B): Rostrum broadly rounded, rostral setae thin, curved to each other. Bothridia dorso-laterally opened, sensillus apically thickened with short spines exobothridial setae very short and thin located at lateral margins of bothridia. The surface of prodorsum with irregular elevations.

Notogaster (Fig. 3A): Oval, without longitudinal carina in front of notogaster. Anterior border of notogaster convex. The surface of notogaster with wrinkles or irregular elevations medially and with radially arranged lines (Fig. 3C).

Venter (Fig. 4): Anal and genital plates large and very close to each other. Genital plate transversely divided into two parts. Genital plates with seven pairs of thin setae (5+2). Adanal plate with three pairs of minute setae.

Remarks: *Neoliodes* is a small genus with four known species and has a cosmopolitan distribution except the Antarctic region (Subías, 2004; updated 2015).

This is the first record of *N. ionicus* from Turkey. *Neoliodes theleproctus* (Hermann, 1804) belonging to this genus was previously recorded from Yozgat Province of

Turkey by Per et al. (2015).

The newly recorded species *N. ionicus* is very similar to *N. theleproctus* but it differs from the latter by (1) notogastral cuticle with wrinkle or irregular elevations that do not form a reticulum (in *N. theleproctus* cuticle with aerolar reticulation), (2) sensillus thin and longer (sensillus short and thick in *N. theleproctus*), and (3) slender and fusiform notogastral setae (widened notogastral setae) (Perez- Inigo, 1997; Weigmann, 2006).

The length of body was given as 1200 by Weigmann (2006). The body length of our samples is between 1330-1336 and slightly larger than the previously studied specimens. Other morphological features our specimens are consistent with those of previously studied specimens (Perez- Inigo, 1997; Weigmann, 2006).

Acknowledgements

This study was produced from the postgraduate thesis of the first author and supported by Sakarya University Project number: FBYLTEZ 2015–50–01–043. We wish to thank research associate Fuat Kayış, Sakarya University, Department of Metallurgical and Materials Engineering for SEM images.

References

- Balogh J., Balogh P. 1992. The Oribatid Mites Genera of the World. Vol. 1. Hung. Nat. Mus. Press, Budapest, 263 p.
 Per S., Taşdemir M., Ayyıldız N. 2015. New oribatid mites

- (Acari, Oribatida) for the fauna of Turkey. *Türk. Entomol. Bült.*, 5 (1): 29-34.
- Perez-Inigo C. 1997. Acari: Oribatei, Gymnonota. In: *Fauna Iberica*. Vol. 9 (Eds. M. A. Ramos et. al.). Museo Nacional Ciencias Naturales, CSIC, Madrid, 374 p.
- Subías L.S. 2004. Listado sistemático, sinonímico y biogeográfico de los ácaros oribátidos (Acariformes: Oribatida) del mundo (excepto fósiles). *Graellsia*, 60 (número extraordinario), pp. 3–305. Online version; http://escalera.bio.ucm.es/usuarios/bba/cont/docs/RO_1.pdf (15 September 2015).
- Travé J., Vachon M. 1975. François Grandjean 1882-1975. (Notice Biographique & Bibliographique). *Acarologia*, 17(1): 1-19.
- Weigmann G. 2006. Hornmilben (Oribatida). In: *Dahl, Tierwelt Deutschlands* 76. Goecke & Evers, Keltern, 520 p.
- Willmann C. 1931. Moosmilben order Oribatiden (Oribatei). pp. 79-200. in F. Dahl (Ed.). *Die Tierwelt Deutschlands*, Vol. 22, V. G. Fischer, Jena, 200 p.
- Yalçın S., Doğan S., Ayyıldız N. 2013. Uzunoluk Ormanı'nda (Erzurum) yaşayan bazı oribatid akarlar (Acari: Oribatida) ve onlardan izole edilen mikrofunguslar. *Türk. Entomol. Derg.*, 37(1): 117-131.