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Subscriptions: Year 2020 (Volume 60): 450 €
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Previous volumes (2010-2018): 250 € / year (4 issues)
Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France
ISSN 0044-586X (print), ISSN 2107-7207 (electronic)

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d’avenir » programme (Labex Agro: ANR-10-LABX-0001-01)

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A NEW SPECIES, *SPHAEROCHTHONIUS SPECTABILIS* SP. N.,
OF SPHAEROCHTHONIIDAE (ACARINA, ORIBATIDA)
FROM A TERMITE NEST (*ANACANTHOTERMES AHNGERIANUS* JUC.)
IN THE SOUTHWESTERN TURKMENISTAN DESERT

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**ABSTRACT:** A new oribatid species, *Sphaerochthonius spectabilis* sp. n., is described from nests of the termite *Anacanthotermes ahngerianus* Juc., in the southwestern Turkmenistan desert.

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In a previous study by PETROVA-NIKITINA (1987) on the commensal mite fauna from nests of termites (*Anacanthotermes ahngerianus*) in southwestern Turkmenistan, it was observed that over sixty species of mites inhabit the underground nests of these termites, represented mainly by free-living soil species. It turned out that the composition of the mite fauna is unique, in terms of both the species present and the range of the dominant species. Forty-five percent of the total number of species was composed of primitive mites and about seventy-five percent of the total number of specimens consisted of archaic oribatids and primitive gamasids. The primitive families of the oribatids were recognized to be: Ctenacaridae, Aphelacaridae, Parhypochthoniidae, Brachychthoniidae, Cosmochthoniidae, Sphaerochthoniidae, Lohmanniidae and Protoplophoridae. In the present paper the description of a new species of the family Sphaerochthoniidae is presented.

In the description, chaetotaxic notations and other characters follow the terminology of BALOGH & BALOGH (1992), GRANDJEAN (1940), MORITZ (1976) and MAHUNKA & ZOMBORI (1985). The drawings were made with the aid of a camera lucida attached to a compound microscope, and the micrographs taken with a SEM (JEOL JSM-5200).

*Sphaerochthonius spectabilis* sp. n.

**Type material:** Holotype ♀, Turkmenistan Kara-Gidjak, April 1975, from excrement in chambers of termite nest, D. P. Zuzikov leg., deposited in Department of Entomology, Faculty of Biology, Moscow Lomonosov State University, Moscow.
Paratypes: 2 ♀, 4 nymphs with same data as holotype; 3 ♀ and 2 nymphs, Turkmenistan Dushak, 8–12 June 1981, from excrement in chambers of termite nest from depth 0–40 cm, D. P. Zuzikov leg., deposited in Institute of Soil Science and Photosynthesis, Pushchino, and 11 ♀, one nymph and larva (on SEM stubs) with same locality data, deposited in the Zoological Museum of Turku University.


Hysterosoma elongated and oval (Fig. 1a; Pl. I: 1, 2). Gnathosoma covered frontally by rostrum (Pl. II: 1).

**Prodorsum.** Characteristic patterns: transversal and longitudinal ridges formed from cerotegument at base and middle part of prodorsum. Close to margin of rostrum is a pattern of almost parallel lines (Pl. II: 1). Rostrum tapers to its mid-line, ending in a sharp point. Between the rostral setae is a nose-shaped formation (Fig. 1d). All prodorsal setae, except exobothridial setae exa, T-shaped and biramous, flat, widened with bristles (Pl. II: 4). Lamellar and rostral setae mostly widened, leaf-shaped; interlamellar setae narrower (Pl. II: 2). Two pairs of exobothridial setae: exa very small and slightly spinose; exp T-shaped, longer and biramous with bristles (Pl. II: 3). Head of sensillus twice as long as stalk and slightly broadened with bristles.

*Segmentation and setation of the notogaster.* Adult mites with only one transverse suture. Four pairs of setae on shield Na: c', c2, c3 and d3, T-shaped, biramous, widened frontally, with long, narrower posterior part (Pl. I: 1) in adult. Around

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**Fig. 1:** *S. spectabilis* nov. spec.

PLATE I: S. spectabilis nov. spec.
PLATE II: S. spectabilis nov. spec. (adult).
border of each seta is a thick row of small bristles, which may also sometimes partly cover the flat part of surface.

Anterior part of shield Py covered by posterior part of shield Na, which appears transparent under a light microscope, revealing two pairs of very short, thin setae, \( d_1 \) and \( d_2 \). Setae \( e_1 \) and \( e_2 \) of adults situated far from frontal border of shield Py; these are T-shaped and widened in the same way as setae \( c_1-c_3 \). Narrow portions of setae \( e_1 \) directed backwards, while setae \( e_2 \) are situated transversally, with the ends directed to lateral sides. Behind row of setae \( e_1-e_2 \) are especially widened setae, \( f_1 \) (Pl. I: 1, 2) and \( f_2 \), which, like setae \( h_{1-3} \) and \( p_{1-3} \), are more widened than the other notogastral setae, almost round with secondary setal rows on border parts and covering most of the surface.

Nymphs with two sutures (Fig. 1; Pl. I: 3). Four pairs of setae on shield Na: \( c_1, c_2, c_3 \) and \( d_4 \), these notogastral setae being T-shaped, with long ciliation. Anterior part of notogastral mid-shield (Nm) with two pairs of very short, thin setae, \( d_1 \) and \( d_2 \) (Fig. 1e). On shield Py setae \( e_1 \) and \( e_2 \) not T-shaped, but “tree-shaped”, their stalks narrow with branches of secondary ciliation. Longest branches start at base of setae and become shorter at ends of setae. Setae \( f_1 \) (Pl. I: 3) and \( f_2 \) T-shaped, crossbars with long, branched secondary cilia. Setae \( h_{1-3} \) and \( p_{1-3} \) similar to \( f_1 \) and \( f_2 \).

Larvae with three sutures (Pl. I: 4). Shield Na with four pairs of setae: \( c_1, c_2, c_3 \) and \( d_4 \); T-shaped, very long, narrow crossbars with secondary cilia. Anterior part of notogastral mid-shield (Nm) with two pairs of very short, thin setae, \( d_1 \) and \( d_2 \). Shield \( Nm_2 \) with two pairs of setae, \( e_1 \) and \( e_2 \). These setae also “tree-shaped”, but their stalks are very narrow, with branches of cilia. Setae \( f_1 \) and \( f_2 \) and setae \( h \) and \( p \) of shield Py similar to those of nymphs, but crossbars narrower.

**Integument of body.** Surface of shields Na, Py and Pl (pleural) covered by cerotegument with special pattern. Viewed through the cerotegument, using transmitted light, a regular six-sided “net” with a central circle can be seen (Fig. 1c), but scanning electron micrography (Pl. III: 1) shows the surface of the body covered by small “flowers” with small, round central holes. Each angle of the triangular wax-formation (“petal”) is directed toward its own aperture. The surface of the epicuticle in-between these triangles is flat, smooth and without cerotegument. In transverse section (Pl. III: 2) it can be seen that each pore is connected to its own chamber in the procuticle. Walls of chambers formed by sides of the six-sided nets. The angles of the six-sided nets form thicker, triangular procuticles on which triangular wax-layers have been secreted.

Surface of epicuticle of nymphs and larvae in Scanning Electron Microscope (Pl. I: 3 & 4) flat and smooth, showing only irregularly-ordered pores of procuticle canals, whereas under the light microscope six-sided nets are slightly noticeable in some places.

The surface of the integument on the legs and the prodorsum does not show the complicated pattern mentioned above; there are only ridges and small, irregular heaps of wax-formation.

**Ventral side.** Palps with five articles (Pl. IV: 2). Chaetotaxy: 0—2—1—2—10. Epimeral formula 3—3—3—3—3, all setae rough-haired. Eight pairs of setae on oval genital plates (Pl. III: 3). Anal plates very narrow, with 14 pairs of very short, thin setae (Pl. III: 4; Fig. 1b). Adanal plates at least twice as wide as anal ones, and covered by four pairs of round, widened setae.

**Legs.** Chaetotaxy: I (0—3—4—6—19), II (1—5—4—6—17), III (2—3—3—4—12) & IV (2—3—3—4—11). Solenidiotaxy: I (0—1—3), II (0—1—2), III (0—1—0), IV (0—1—0). Solenidion \( \varphi \) of tibia I on a special projection (Pl. IV: 1). Solenidion \( \omega P \) is thick, blunt-ended and shorter than slender solenidions \( \omega L \) and \( \omega V \). Famulus \( \varepsilon \) short and blunt. Every leg has modified, T-shaped or ramose setae as follows: on femur I, II, III & IV setae \( d \) and \( l \) on genu II setae \( d \); on femur and genu III & IV setae \( d \) and \( l \) (Pl. III: 3). Setae \( pv' \), \( m' \) and \( m'' \) (tarsus I) thick, short and feathered. Legs with three claws; lateral claws narrower and more slender than central ones.

**Diagnosis:** *Sphaerochthonius spectabilis* differs from all known species of family Sphaerochthoniidae by the strongly widened setae of the prodorsum and notogaster, the number of anal setae, the epimeral formula, and the characteristic structure of the integument. *Sphaerochthonius fungifer*
PLATE III: *S. spectabilis* nov. spec. (adult).
Mahunka, 1983 has widened T-shaped setae on the prodorsum and notogaster (c₁–c₃), but differs from *S. spectabilis* in the form of the sensillae, setae e–h, anal setae and the number of anal setae. *S. spectabilis* differs from *S. bengalensis* Sanyal and Sengupta, 1990 by the form of the exobothridial and notogastral setae, especially *e₁*, by the sculpturing of the cerotegument at base and middle part of the prodorsum, and by the number of anal setae.

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