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Doutnacia ammophila sp. n., with remarks on the genus *Doutnacia*
RUSEK, 1974
(Collembola: Onychiuridae: Tullbergiinae)

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ABSTRACT. *Doutnacia ammophila* sp. n. is described based on material from Bulgaria and Poland. The description of *Doutnacia xerophila* RUSEK, 1974 is corrected and supplemented. The definition of the genus *Doutnacia* is discussed.

Key words: entomology, taxonomy, *Collembola*, *Onychiuridae*, *Tullbergiinae*, *Doutnacia*, new species, Bulgaria, Poland.

In our Bulgarian material of the genus *Doutnacia* RUSEK, 1974, collected during a faunistic trip to neighbourhood of Sozopol and in the Polish material received from Dr hab. Wanda M. WEINER we have identified two species. One fits the definition of *Doutnacia xerophila* RUSEK, 1974, except some details, first of all sensory chaetotaxy of IV antennomere. Another is a new species. Below, we correct and supplement the description of *D. xerophila*, describe the new species and give some remarks on the definition of genus *Doutnacia*.

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***Doutnacia xerophila* RUSEK, 1974**

MATERIAL EXAMINED

Many specimens, male and female, lichens on sand dune, Arkutino near Sozopol, Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; many specimens, male and female, roots of plants on sand dune, Arkutino near Sozopol,

Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; many specimens, male and female, litter on the bank of river Veleka near Zvezdec, Bulgaria, 10.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; 3 sp., dry meadow on the rocks, Czerwone Skałki, Pieniny Mountains, Poland, 10.04.1976, leg. M. W. WEINER.

In the Bulgarian and Polish material of *D. xerophila* details of sensoric chaetotaxy of IV antennomere show some differences in comparison with the original description. The species has apical papilla and both subapical pits "f" and "g" (fig. 4). Prof. J. RUSEK, who examined the type material confirmed our observations in litt. Besides, in our specimens sensilla "a", "c" and "e" are differ from the original description, they are distinctly curved but not thickened. According to our observations vesicles in the postantennal organ are narrow, bean-shaped, usually with deep (rarely shallow) hollow in the middle and never depressed in the integument (figs 8b, 8c, 10, 13). PAO length/width ratio is 3.8-4 : 1 and PAO length/size of the neighbouring pseudocellus ratio is 2-2.5:1 (fig. 10). In the examined specimens microsensilla on meso- and metathorax are oval but most specimens collected in Bulgaria have an oval microsensillum on mesothorax and a circular one on metathorax (figs 5, 6). Ventral tube with 6+6 setae. All the remaining characters are the same as in original description (RUSEK, 1974).

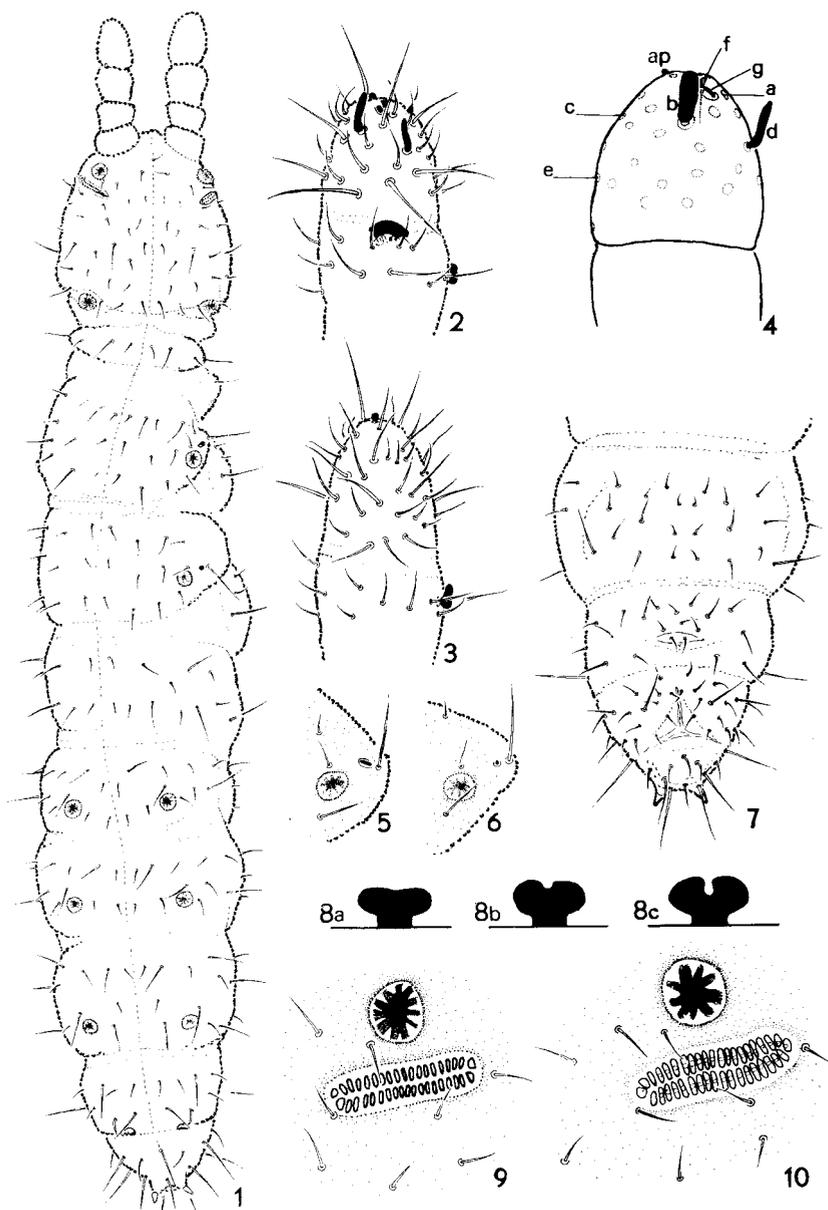
Doutnacia ammophila sp. n.

DIAGNOSIS

Body 0.45 mm long. White. Antennal segment IV with apical papilla, subapical sensory pegs "f", "g" and thickened sensillae "b", "d". Antennal organ III consists of one large sensory club and two small sensory pegs. Ventral side of antennal segment III with one large sensory club. Postantennal organ narrow (length/width ratio 4-5 : 1), not depressed in integument, with 37-39 bean-shaped vesicles in 2 parallel rows. Vesicles usually simple but sometimes with shallow hollow in the middle. Formula of pseudocelli: 11/011/01111. Lateral sensillum "s" on meso- and metanotum long, thin and setaceous. Microsensillum on mesothorax oval, on metathorax circular. Sensillum p₃ on abdominal tergum V short, setaceous, only slightly thickened. Abdominal tergum IV with microchaeta p₁ situated closer to median line than macrochaeta p₂. Two anal spines. Ventral tube with 6+6 setae. Anal lobes without seta l₂ and l₂.

MATERIAL EXAMINED

Type material: holotype: male on slide, lichens on sand dune, Arkutino near Sozopol, Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI (preserved in authors' collection), paratypes: 11 sp. on slide, lichens on sand dune, Arkutino near Sozopol, Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; female on slide, roots of plants on sand dune between Černomorec and Sozopol, Bulgaria, 4.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI.



1-10. 1 - *D. ammophila* sp.n., dorsal chaetotaxy and arrangement of pseudocelli; 2 - *D. ammophila* sp.n., right antenna, dorsolateral view; 3 - *D. ammophila* sp.n., right antenna, ventrolateral view; 4 - *D. xerophila*, antenna, dorsal view (scheme); 5 - *D. ammophila* sp.n., lateral part of mesothorax; 6 - *D. ammophila* sp.n., lateral part of metathorax; 7 - *D. ammophila*, chaetotaxy of IV-VI abdominal sterna; 8 - single vesicle in PAO (diagrammatic), a - simple, b - with shallow hollow in the middle, c - with deep hollow in the middle; 9 - *D. ammophila* sp.n., postantennal organ and pseudocellus; 10 - *D. xerophila*, postantennal organ and pseudocellus

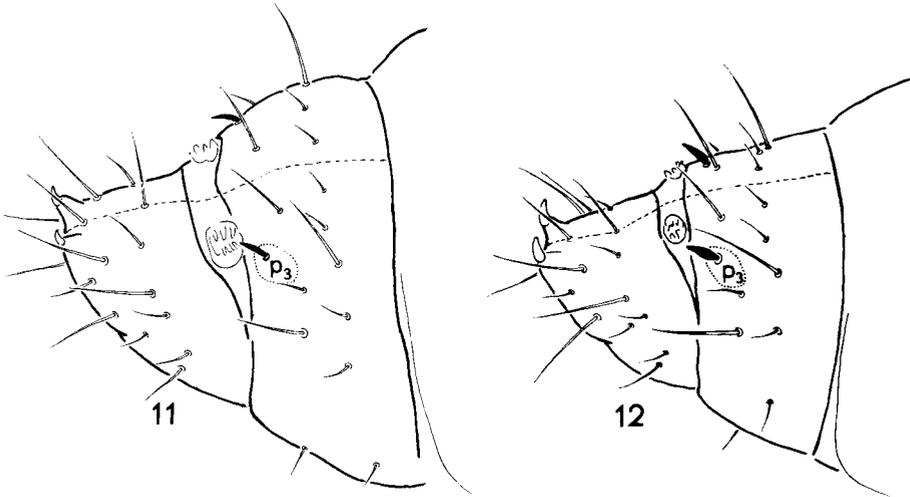
Other material: many specimens, male and female, lichens on sand dune, Arkutino near Sozopol, Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; many specimens, male and female, roots of plants on sand dune, Arkutino near Sozopol, Bulgaria, 6.09.1996, leg. R. J. POMORSKI, D. SKARŻYŃSKI; 1 sp., dry meadow, south slope, Winiary near Busko-Zdrój, Małopolska Upland, Poland, 4.07.1991, leg. M. BIENIEK.

DESCRIPTION

Body elongated, *Mesaphorura*-like (fig. 1), 0.45 mm long. Colour of the body white. Granulation of whole body delicate and uniform.

Antennae shorter than head. Antennal segment IV with small apical papilla, subapical sensory pegs "f", "g" and thickened sensillae "b", "d" (fig. 2). Antennal organ III consists of one large sensory club and two small sensory pegs, arranged closely together (fig. 2). Ventral side of antennal segment III with one large sensory club (figs 2, 3).

Postantennal organ relatively narrow (length/width ratio 4-5 : 1), not depressed in integument, with 37-39 bean-shaped vesicles in 2 parallel rows (figs 9, 13). The vesicles are usually simple (fig. 8a), but sometimes with shallow hollow in the middle (fig. 8b).



11-12. *Doutnacia* spp.: 11 - *D. ammophila* sp.n., chaetotaxy of V-VI thoracic tergum, 12 - *D. xerophila*, chaetotaxy of V-VI thoracic tergum

Dorsal chaetotaxy as in Table 1:

Table 1. Dorsal chaetotaxy formula in *Doutnacia ammophila* sp. n.

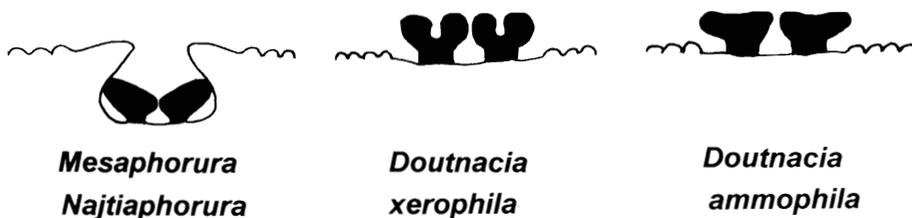
	I	II	III	I	II	III	IV	V
a	-	5	4	4	5	5	4	4
m	4	4	4	1	1	1	2	-
p	-	4	4	5	5	5	5	4
subc./pl.	2	3	3	2	3	3	5	1

Lateral sensilla "s" on meso- and metanotum thin and setaceous (figs 5, 6). Thoracic tergum II with oval microsensillum, thoracic tergum III with circular microsensillum (figs 1, 5, 6). Abdominal tergum IV with microchaeta p_1 situated closer to the median line than macrochaeta p_2 . Anal lobes without setae l_2 , l_2 (fig. 7).

Pseudocellar formula: 11/011/01111 (fig. 1). Pseudocelli circular, star-like, type I (figs 1, 5, 6, 9).

Claws without denticle, empodial appendage rudimentary. Tibiotarsi with 11, 11, 11 setae.

Two anal spines on abdominal tergum VI. Ventral tube with 6 + 6 setae. Abdominal sternum IV without trace of furca (fig. 7).



13. Comparison of postantennal organs (cross section) of *Mesaphorura*, *Najtiaphorura* and *Doutnacia* (diagrammatic)

AFFINITY

D. ammophila sp. n. is closely related to *D. xerophila* RUSEK, 1974 from which it differs in the following characters: pseudocellar formula 11/011/01111 (*D. xerophila* 11/011/11111), distinctly thinner sensilla "b" and "d" on IV antennomere (compare figs 2 and 4) and sensillum p_3 on abdominal tergum V (cf. figs 11 and 12), PAO length/width ratio is 4-5:1, in *D. xerophila* 3,8-4:1 (compare figs 9 and 10), vesicles in PAO are usually simple but sometimes with shallow hollow in the middle (figs 8a, 8b), in *D. xerophila* vesicles usually have deep (rarely shallow) hollow in the middle (figs 8b, 8c).

We know that Dr. A. FJELLBERG has material from Denmark of *Doutnacia* sp. n. without pseudocellus on abdominal tergum I. According to our personal communication with Dr. FJELLBERG, these species differ strongly in expression of characters of sensillar chaetotaxy. *D. ammophila* has thinner sensilla "b" and "d" on IV antennomere and sensillum p₃ on abdominal tergum V.

DERIVATIO NOMINIS

The name is derived from the Greek name of sand (amos) - typical habitat of this species.

DISCUSSION

ZIMMARS and DUNGER (1994) listed the following characters as generic differences between *Doutnacia* and *Najtiaphorura* WEINER and THIBAUD, 1991: lack of apical papilla and presence of one subapical sensory peg in *Doutnacia*. In the light of the corrected and supplemented description of *D. xerophila* and the description of *D. ammophila* sp. n. this view is incorrect. The basic character which distinguishes the genus *Doutnacia* from *Najtiaphorura* is the postantennal organ never depressed in integument (fig. 13). *Doutnacia coineau* MASSOUD and THIBAUD, 1985, subsequently described from France, without apical papilla and with PAO of *Mesaphorura* - type (which lies in the bottom of a deep hollow) probably belongs to another genus.

ACKNOWLEDGEMENTS

We are greatly indebted to Dr hab. Wanda M. WEINER for her comments and the Polish material of *Doutnacia* and to Prof. Josef RUSEK for personal engagement in confirmation of our observations on *D. xerophila*. We wish to express our sincere gratitude to Dr. Arne FJELLBERG for the discussion on the taxonomic status of our species.

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