

***Brachytydeus szeptyckii* sp. n. (Acari: Actinedida: Tydeidae); a new tydein mite from Poland**

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Abstract. The new species of the family Tydeidae, subfamily Tydeinae – *Brachytydeus szeptyckii* from Poland is described, figured and located in a key.

Key words: Acari, Tydeidae, Tydeinae, morphology, taxonomy, new species, Poland.

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I. INTRODUCTION

The Tydeidae are small (100-500 μm) arthropods, which belong to the most common prostigmatic mites found in soil, moss, litter, as well as on trees (in bark, on leaves and fruits). They are predatory and omnivorous, play an important role as scavengers, being simultaneously a food for some bigger predatory mites.

Up to the present, 66 species were known from Poland (KAŻMIERSKI 2008, 2009). The another and new species described below is assigned to *Brachytydeus* THOR, 1931 sensu ANDRÉ 2005 – the synonym of *Lorryia* OUDEMANS, 1925 sensu KAŻMIERSKI 1989 (OUDEMANS 1925, THOR 1931, KAŻMIERSKI 1989b, ANDRÉ 2005).

II. MATERIAL AND METHODS

The material originates from author's collection. The nomenclature and notation of ANDRÉ 1981 and KAŻMIERSKI 1989a is retained here. Besides of the holotype, another 13 specimens of a new species were examined (three females, one male, one tritonymph, one protonymph and seven larvae). Moreover, two specimens (female and deutonymph) of *Brachytydeus filiformis* (MOMEN et LUNDQUIST, 1966) comb.n. were examined for comparison. One can conclude that both taxons are separated by sufficient gap to find their specific peculiarity, respecting their infraspecific variation (see differentiating diagnosis).

All measurements are given in micrometers (μm) and relate to the holotype (if not stated otherwise). Specimens were mounted on slides in modified Berlese medium and examined with contrast phase microscope under immersion.

III. MORPHOLOGY AND TAXONOMY

Brachytydeus szeptyckii sp. n.

Type locality. South-East Poland. Zamość province. Tartaczna Mountain near Zwierzyniec. Forest on the summit: oaks, hornbeams, beaches, cherry trees, hawthorns, also *Evonymus verrucosa*. Lower vegetation: *Actaea spicata*, *Asarum europaeum*, *Sanicula europaea*, *Hepatica nobilis*, *Cephalanthera damasonium*. From sifted litter. 21.06.1978, leg. J. RAFALSKI and J. BŁOSZYK. Locality and slides marked as T-0164 in author's collection; holotype tritonymph (a specimen which remains in the best condition) and paratype tritonymph.

Other locality. South-East Poland. Kielce province. Góry Świętokrzyskie (Holy Cross Mountains). Cząstków (Łysogóry district). Slope of Pokrzywianka valley between Cząstków and Rudki near Nowa Słupia. Grass community with *Brachypodium pinnatum*, thicket with *Peucedano-Coryletum* and *Carpino-Prunetum*. 21.05.1982, leg. A. KAŻMIERSKI and W. NIEDBAŁA. Locality N° 15 in KAŻMIERSKI 1990, slides marked as HCM 8A/W-82: three females, male (allotype), protonymph and seven larvae.

Type repository. Holotype tritonymph from Tartaczna Mountain (mounted on slide N° T-0164/P-3, together with a female of unknown species of the genus *Raphignathus*) is kept at the Department of Animal Morphology (DAM), Adam Mickiewicz University, Poznań. Paratype tritonymph from Tartaczna Mountain (more "wrinkled", mounted in slide T-0164/P-1, together with a female of *Lorryia catenulata*) is deposited in Biozentrum Grindel und Zoologisches Museum formerly known as Zoologisches Institut und Museum der Universitaet Hamburg, Germany (ZMH). The specimens from Holy Cross Mountains (all mounted on slide-set marked as 81/W-82) remains in DAM. There are: female 1 (with egg) on slide P-3, female 2 on slide P-7, female 3 on slide P-10, allotype male on slide P-5, protonymph on slide P-10, larva 1 on slide P-5, larva 2 on slide P-6, larvae 3 and 4 on slide P-7, larva 5 on slide P-8, larva 6 on slide P-9 and larva 7 on slide P-13.

Etymology. This species is dedicated to the memory of Professor Andrzej SZEPTYCKI, my dear teacher and a wonderful person.

Differentiating diagnosis. *Brachytydeus szeptyckii* sp. n. belongs to the group of species named „*nobila* group” (KAŻMIERSKI 1998, p. 296), having relatively large and widened body with strong ornamentation, long, broad and rounded distally palpal eupathidium, and –finally– lyrifissures *im* located antero-medially to setae e1. In spite of characters mentioned above, the new species resembles *Brachytydeus filiformis* (MOMEN et LUNDQVIST, 1996) – comb.n. [= *Tydeus filiformis* in MOMEN & LUNDQVIST 1996] additionally by the arrangement of dorsal striation, which represents subtype “Biparalorryia-incerta” (KAŻMIERSKI 1998). However, both species can be distinguished by the following characters:

Brachytydeus filiformis (MOMEN et LUNDQVIST) comb. n.

1. Meshes of AA0 strongly elongated in various directions (Fig. 3A).
2. Ventrally, between metasternal setae the striae form narrow “V”-pattern (Fig. 3B).
3. Dorsal body setae moderately serated (Fig. 3C).

Brachytydeus szeptyckii sp. n.

1. Meshes of AA0 multiangular, more-less as long as broad (Fig. 2A).

2. Ventrally, between metasternal setae the striae lie transversely, forming an obtuse “U”-pattern (Fig. 2B).

3. Dorsal body setae strongly serrated (Fig. 2C).

Description. Idiosoma. Broadly-oval body, dark green in colour. Holotype tritonymph (Fig. 1): length – 293, width – 197. Paratype tritonymph: length – 261, width – 180. Dorsal ornamentation: striation subtype “Biparalorryia-incerta” (see KAŻMIERSKI 1998, p. 373). Laterally and slightly posteriorly to setae c1, one pair of rosettes is distinctly visible (Fig. 4K). They indicate the places of the internal sigillae (insertions of muscles – see KAŻMIERSKI 1998, p. 289). Reticulation limited to front of aspidosoma (AA0 area – Fig. 2A). A few single meshes occur on very end of opisthosoma, on its ventral side. Tubercles on the striae in shape of slightly flattened hemispheres (Fig. 4F). Reticulum with tubercles and “Y”-shaped cross-ties. Eyes not confirmed (compare KAŻMIERSKI 1989b, p. 301). Bothridial setae (bo) whip-like (Fig. 4E), more than three times longer than the normal dorsal setae. These latter are narrowly-lanceolate, subtly curved, pointed and strongly serrated (Fig. 2C). Setae ps1 are the same in shape, although slightly finer and situated ventrally. Length of setae: bo-70, ro-23, la-20, ex-22, c1-21, c2-19, d1-22, e1-22, f1-23 (one of the f1 seta is plucked-off), f2-21, h1-22, h2-22, ps1-19. Distances: c1-c1: 53, d1-d1: 58, e1-e1: 169, f1-f1: 40, h1-h1: 53, ps1-ps1: 39, f1-h1: 28. Lyrifissure *ia* (Fig. 4G) lies posteriorly to c2 at the distance longer than 1/3 of sector c2-e1, and medially to c2-e1 line. Lyrifissure *im* (Fig. 4H) lies in the same longitudinal row with *ia*, medially and slightly anteriorly to e1. Ventral side more subtly striated; the striae between metasternal setae transversally and form an obtuse “U”-pattern (Fig. 2B). Genital organotaxy: TN: 4-4, two genital pores are present.

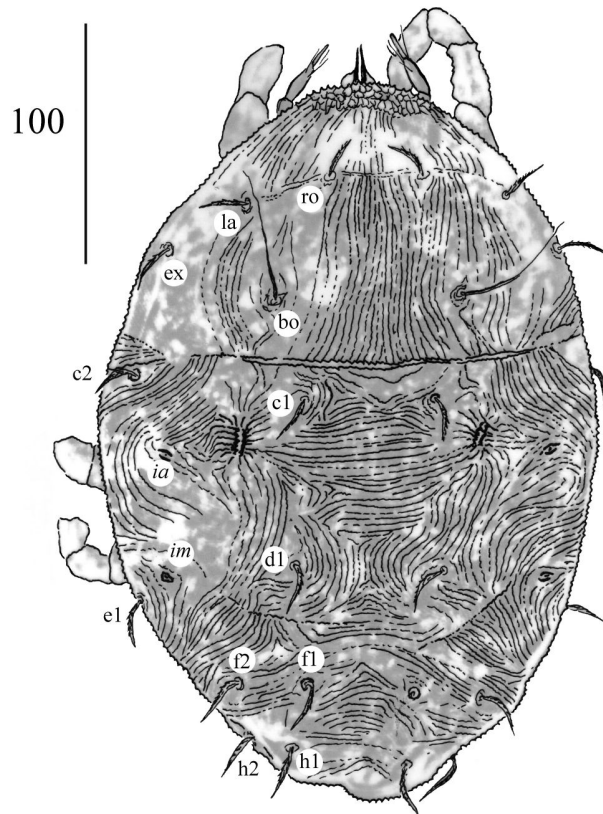


Fig. 1. *Brachytydeus szeptyckii* sp. nov., holotype tritonymph: dorsal side, general appearance.

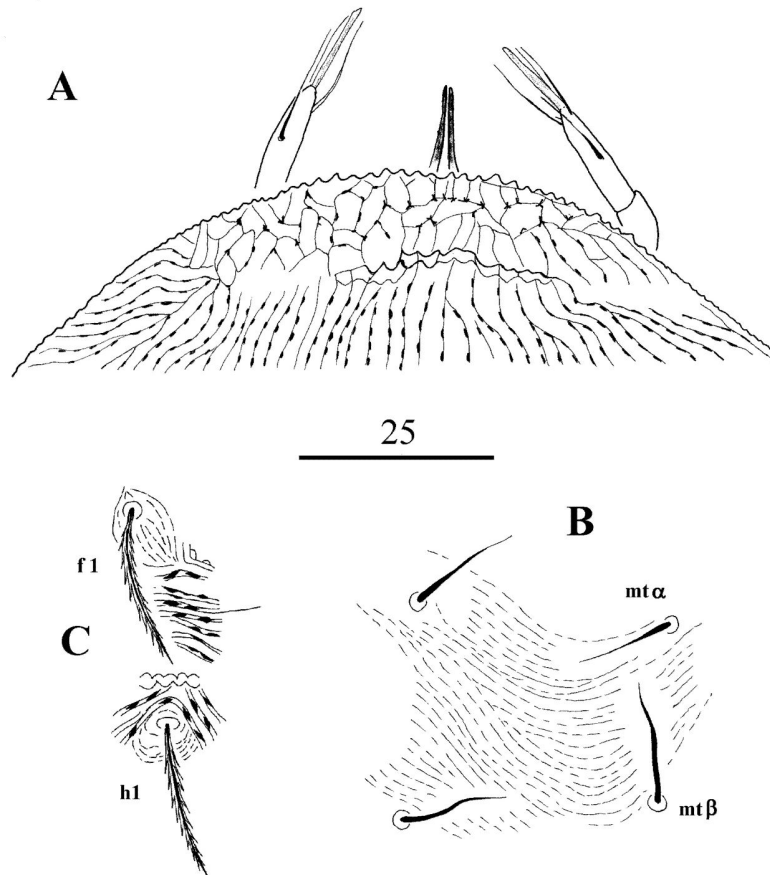


Fig. 2. *Brachytydeus szeptyckii* sp. nov., holotype. A – anterior part of aspidosoma (dorsal view); B – ventral striation between setae mt; C – dorsal fragment with setae fl and hl.

Gnathosoma. Hidden under aspidosoma and only ends of stiletos, as well as palptarsi can be visible from above (Fig. 2A). Cheliceral stiletto (Fig. 4D) longer than palpal tarsus (Fig. 4C), but shorter than palpal tarsus combined with its terminal eupathidium ($p\zeta$). The latter is stick-like, thick, straight, rounded distally (i.e. characteristic for “*nobila*” species group) and long – but not as long as palpal tarsus. The setae of palptarsus are more or less equal in length with their segment. None of them is forked distally. Seta l'' is the longest one, whereas the l' is the shortest one (Fig. 4C). Vestigial setula ba not confirmed. Measurements: stiletos – 21, palpal femurogenu – 23/11, df – 23, dg – 16, t' – 16, t'' – 6, palptarsus – 15/5, ($p\zeta$) – 12.

Legs. Coxal organ oval (Fig. 4J). Epimeral formula: (3 – 1 – 4 – 2). Chaetotaxy (from tarsus to trochanter) is as follow: leg I (8 – 3+1 – 3 – 3 – 1), leg II (6 – 2 – 2 – 3 – 0), leg III (5 – 2 – 1 – 2 – 1), leg IV (5 – 2 – 1 – 1 – 0). Tarsus+apotele I (Fig. 3A): length – 35, width – 11, height – 12. Length of solenidion ω I – 5.5. Length of seta ft' – 16, $ft''\zeta$ – 23. Famulus k'' (4 long) broadened distally, with three teeth. Solenidion ω II: 2 long (Fig 4B). Empodial hooks (om) present.

Females. The same in characters as given above with exception of genital region, although proportionally bigger. Dimensions: female 1 – length 350, width 249, female 2 – 338/244, female 3 – 333/239. Female 1 has a single egg inside and slightly longer solenidion ω I. The progenital aperture

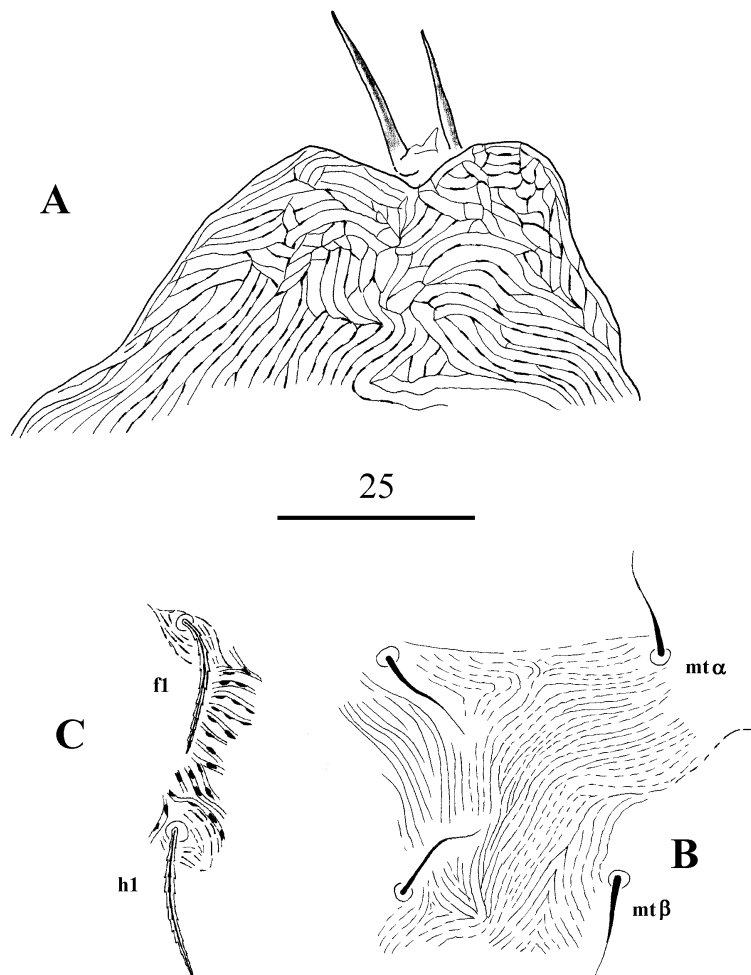


Fig. 3. *Brachytydeus filiformis* (MOMEN et LUNDQVIST, 1996), the specimen from the vicinity of Janów Lubelski, Poland. A – anterior part of aspidosoma (dorsal view); B – ventral striation between setae mt; C – dorsal fragment with setae fl and hl.

leads to progenital chamber and has a shape similar to a recumbent letter H. Six pairs of genital setae (ge) and four pairs of adgenital setae (ag) are present (genital organotaxy: 0-6-4).

Male. Similar to female with exception of genital region: longitudinal progenital aperture and four pairs of short and bushy eugenital setae (eu) are present. Body length – 334, width – 242. Genital organotaxy: 4-6-4.

Three pairs of sigillae are more or less visible in adults.

Protonymph. Differs from tritonymph by size (188/130), genital organotaxy (a single pore, genital chaetotaxy 0-1), by epimeral formula (3-1-3-0), by nude trochanter I (lack of seta tr), and –lastly- by chaetotaxy of leg IV (5 – 0 – 0 – 0 – 0).

Larvae. No genitals, six legs only, nude trochanters. Epimeral formula: 3 – 1 – 2. Leg's chaetotaxy: I (8 – 3+1 – 3 – 3 – 0), II (6 – 2 – 2 – 3 – 0), III (5 – 2 – 1 – 2 – 0). A double anabasis on tarsus I (see ANDRÉ 1981). Aspidosomal reticulum inconspicuous. “Caudal” setae (f, h) stronger, more broad in comparison with other ones. Body size: larva 1 – 145/113, 2 – 145/105, 3 – 144/107, 4 – 140/102, 5 – 145/114, 6 – 145/110, 7 – 145/114.

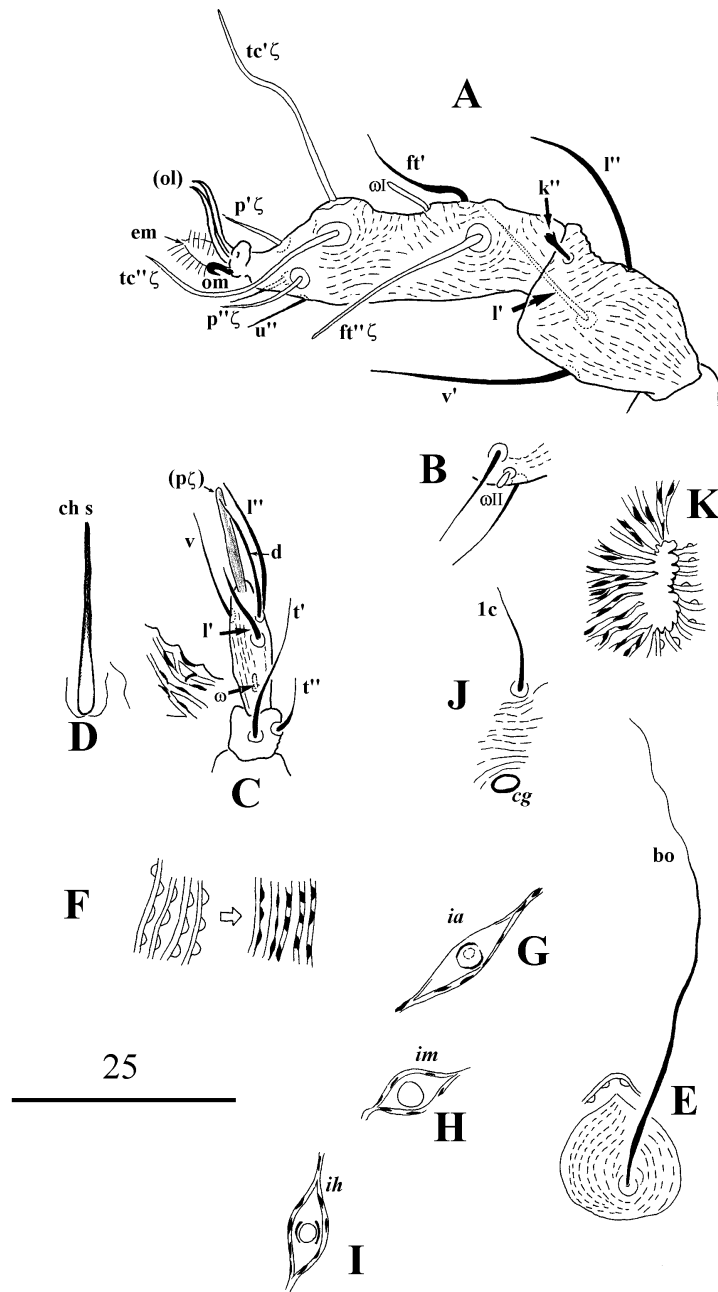


Fig. 4. *Brachytydeus szeptyckii* sp. nov., holotype. A – tibia+tarsus+apotele I (left, adaxially); B – tarsus II, fragment with solenidion ωll ; C – palpal tibia and tarsus (right, dorsally); D – cheliceral stiletto; E – bothridial seta *bo*; F – dorsal striae with tubercles; G – lyrifissure *ia*; H – lyrifissure *im*; I – lyrifissure *ih* (on ventral side); J – coxal organ *cg* and seta *lc*; K – dorsal rosette.

Position in a key. Using the key proposed in KAŻMIERSKI 1998 (pp. 322-337), the new species keys out as *Brachytydeus filiformis* (MOMEN et LUNDQVIST, 1996) n. comb.

The successive steps during the determination of *Brachytydeus szeptyckii* sp. nov. are as follow:

Couplets: 1 → 53 → 58 → 59 → 60 → 61 → 62 →
 62 (new) – Reticulate area on the front of aspidosoma (AA0) present. 63 (new)
 – Lack of reticulation (no AA0 present) 64 new (=former 63)
 63 (new) – Reticulate area AA0 consists of meshes strongly elongated in various directions.
 Ventral striation between setae *mt* longitudinal: striae form the narrow “V”-pattern. Dorsal
 setae moderately serrated *filiformis* (MOMEN et LUNDQVIST, 1996)
 – Reticulate area AA0 consist of multiangular meshes (more-less as long as broad). Ventral
 striation between setae *mt* transversal: striae form an obtuse “U”-pattern. Dorsal setae strongly
 serrated *szeptyckii* sp. n.

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