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Platytrombidium rafalskii n. sp. from Poland with a critical review and
a key to the Palaearctic species
(Acari: Actinedida: Microtrombidiidae)

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ABSTRACT. *Platytrombidium rafalskii* n. sp. from Poland is described and compared with all the Palaearctic species. *Atractothrombium* FEIDER, 1952 is synonymized with *Platytrombidium* THOR, 1936. Its status is discussed, and all Palaearctic species are reviewed and keyed. Record of *Platytrombidium trispinum* (COOREMAN 1949) was actually based on misidentified *Microtrombidium fasciatum* (C. L. KOCH, 1836). *Platytrombidium homocomum* var. *moravica* WILLMANN, 1954 is excluded from *Platytrombidium* and treated as *Valgothrombium moravicum* (WILLMANN, 1954) comb. nov., stat. nov. Three other species appear in new combinations: *Platytrombidium mongolicum* (FEIDER, 1973) comb. nov., *Platytrombidium altaicum* (FEIDER, 1973) comb. nov. and *Platytrombidium longimaculatum* (FEIDER, 1973) comb. nov. *Platytrombidium obtusipilus* (FEIDER, 1955) stat. nov. is raised to the species rank.

Key words: acarology, taxonomy, *Microtrombidiidae*, *Platytrombidium*, Palaearctic region, key, new species, new synonym.

INTRODUCTION

While examining *Microtrombidiidae* from Poland, seven individuals of the genus *Platytrombidium* THOR, 1936 were found to represent a new species. All the specimens were collected at one, very special, locality in the western part of the country. Description of a new species was not possible without a critical review of all the Palaearctic (nominal) species. Some of them seem to be synonymous, but their status will remain unclear until a detailed revision is carried out.

MATERIAL AND METHODS

The mites were preserved in 70-75% ethyl alcohol and mounted in Faure liquid using the procedure described by GABRYŚ (1994). The specimens were determined, measured and drawn with "Jenaval" microscope equipped with phase contrast and camera lucida, each made by "Carl Zeiss Jena". Morphological terminology follows that of ROBAUX (1967, 1974), SOUTHCOTT (1986, 1994) and GABRYŚ (1992, 1996). In this paper the term "opisthosomal setae" refers to dorsal ones only. All measurements are given in micrometers (μm). The scale bars in the figures are uniform for individual structures: general view - 200 μm , legs, aspidosoma and genital-anal region - 100 μm , palps and setae - 50 μm .

Abbreviations used: LB - length of the body, WB - width of the body, L - length, H - height, DS - dorsal opisthosomal setae, S - length of the seta stem, P - length of the seta papilla, CML - total length of crista metopica including anterior process (rod), sensillary area and posterior process, pP - length of posterior process of crista metopica, DiCt - number of spinisetae in distal (anterior) ctenidium + paradont, PrCt - number of spinisetae in proximal (posterior) ctenidium, Rad - number of spine-like setae composing radula, Lf - left, R - right, Bas - basidont, n - number, t - apical, l - lateral, PaTaSol - number of palpal tarsal solenidia.

STATUS OF THE GENUS

The genus *Platytrombidium* was erected by THOR (1936) with *Trombidium vagabundum* BERLESE, 1903 as type species. FEIDER (1952) ignored *Platytrombidium* completely while founding the new genus *Atractothrombium* with *Microtrombidium fusicomum* BERLESE, 1910 as type species. Species "*vagabundum* BERLESE 1893" [sic!], with some others, originally placed in *Platytrombidium* (THOR 1936), was included in *Enemothrombium* BERLESE, 1910 (FEIDER 1952). The only character which, in fact, separates these two genera (s. FEIDER 1955) is the shape of idiosomal setae. In the key (op. cit., p. 96), they are pointed at the top in *Enemothrombium* ["Papile ascujite la capât"], and in *Atractothrombium* - blunt ["Papile tocite la capât"]. The difference between setae pointed or blunt apically is not clear in some species of "*Platytrombidium* group", for they may change gradually, even in one individual (e. g. *vagabundum* or *altaicum*). ROBAUX (1967) considered *Atractothrombium* a synonym of *Platytrombidium*, but with a question mark (op. cit. p. 47). However, in the "Critical list" (op. cit., p. 115) he ignored *Atractothrombium* and placed all FEIDER's species in "*Platytrombidium*" [sic!]. So, according to ROBAUX's suggestion, I consider *Atractothrombium* FEIDER, 1952 **syn. nov.** a synonym of *Platytrombidium* THOR, 1936. *Platytrombidium*, apparently, contains all species placed in *Enemothrombium* by FEIDER (1952, 1955), except *insulanum* (OUDEMANS, 1901) = *quadrispinum* (BERLESE, 1910) and *bifoliosum* (CANESTRINI, 1884) (see also "Remarks on taxonomy"). SOUTHCOTT (1994) also discussed the problem but he decided to keep both genera (i.e. *Platytrombidium* and *Atractothrombium*) separate.

For further discussion on *Enemothrombium* see also GABRYŚ (1996, in press). The diagnosis of *Platytrombidium* follows that of GABRYŚ (1996).

***Platytrombidium* THOR, 1936**

= *Atractothrombium* FEIDER, 1952 n. syn.

= *Atractothrombium*: FEIDER 1955, 1973, SOUTHCOTT, 1994

= *Enemothrombium*: FEIDER, 1952 (part.), 1955 (part.)

= *Microtrombidium*: SCHWEIZER, 1951 (part.), SCHWEIZER & BADER, 1963 (part.).

Medium-sized and big *Microtrombidiidae*, palps strong, palpal tibia with two ctenidia and a radula on medial face (nymphs with one ctenidium) and usually with one or more well developed basidonts on lateral face (all Palearctic species have at least one basidont). Anterior part of crista metopica conspicuously elongate, posterior process present although it may be very short. Opisthosomal setae of one type, short, stout, more or less fusiform, all covered with very numerous, delicate, short setulae. Legs much shorter than idiosoma. Cosmopolitan.

***Platytrombidium rafalskii* n. sp.**

(Figs 1-14, map 1, tab. 1)

TYPE MATERIAL

Holotype. Female no. PL5093 B, collected in the planned nature reserve Wrzosiec near Piaseczna near Węgliniec (SW Poland); Atlantic raised peatbog with *Erica tetralix*, *Ledum palustre*, *Eriophorum vaginatum*, *Sphagnum magellanicum*, 11.06.1989, leg. G. GABRYŚ & J. MAKOL. The substrate (litter, turf etc.) was sifted with entomological sieve of 6 mm mesh and then mites were collected directly on a white sheet without prior extraction with Tullgren apparatus (Berlese funnels). Deposited in author's collection.

Paratypes. Six individuals (3 males and 3 females), same place and date, deposited as follows: PL5091 A (female) in Zoologisches Institut und Zoologisches Museum, Universität Hamburg, Germany, PL5091 B (female) in Division of Plant Industry, Florida Department of Agriculture & Consumer Services, Gainesville, Florida, USA, PL5092 A (male), PL5092 B (female), PL5093 A (male) and PL5093 C (male) in author's collection.

DIAGNOSIS

Medium-sized *Platytrombidium* with characteristic lateral face of palpal tibia: it bears a very specific basidont, very short (27-32), stout, apically blunt and situated in the middle between palpal tarsus and odontus bases. Distal ctenidium of medial face of palpal tibia composed of a stout paradont and 4-7 strong spinisetae, proximal ctenidium consists of 5-6 considerably weaker and thinner spinisetae, radula com-

posed of 6-11 relatively short spine-like setae. Opisthosomal setae of one type and various length, based on distinct papillae, very short, the stem never exceeds 20 μm , irregularly fusiform, some rounded and some very slightly and broadly pointed apically, somewhat narrower at base, all covered with numerous, short setulae. Tarsus I oval-rounded, length/height ratio always less than 1.75 (1.48-1.73). Related to *P. fusicomum* (BERLESE, 1910) and *P. longimaculatum* (FEIDER, 1973). It differs from all the remaining species in a very specific structure and location of basidont and in the combination of other characters. For further details see "Remarks on taxonomy".

DESCRIPTION

Based on holotype and supplemented with data from paratypes; measurements of holotype and four paratypes are given in tab. 1.

Female.

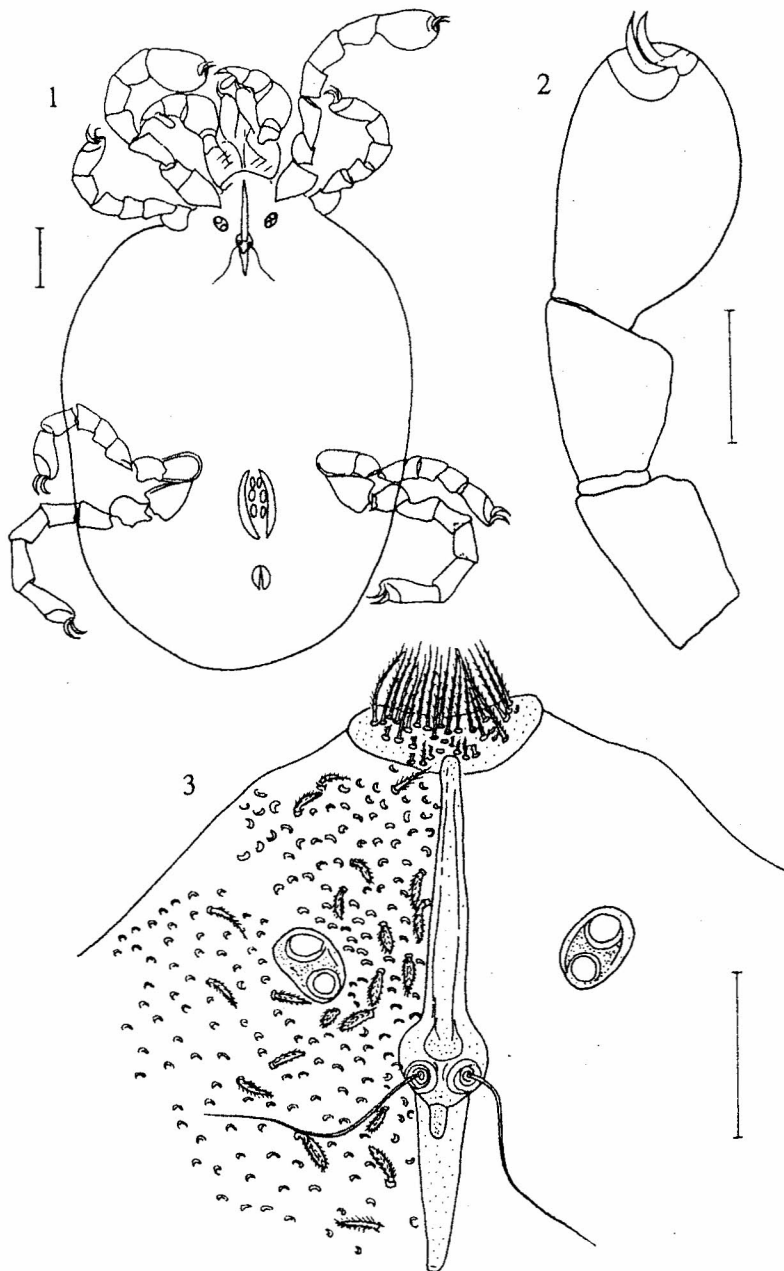
Medium-sized. Colour in life dark red. Body oval, slightly broadened at "shoulders", rounded posteriorly (fig. 1).

Gnathosoma.

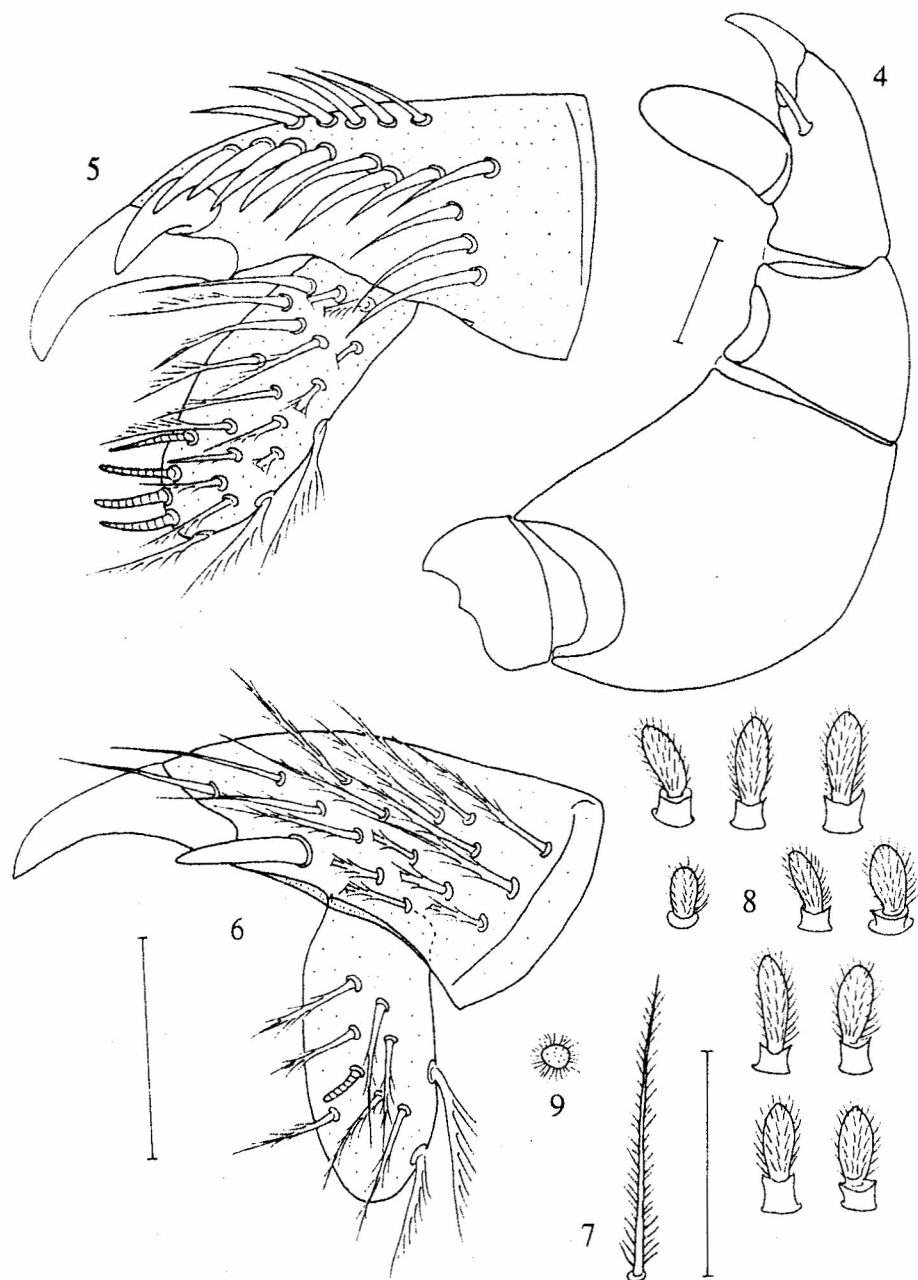
Chelicerae typical of the genus.

Tab. 1. *Platytrombidium rafalskii* n. sp. - metric data.

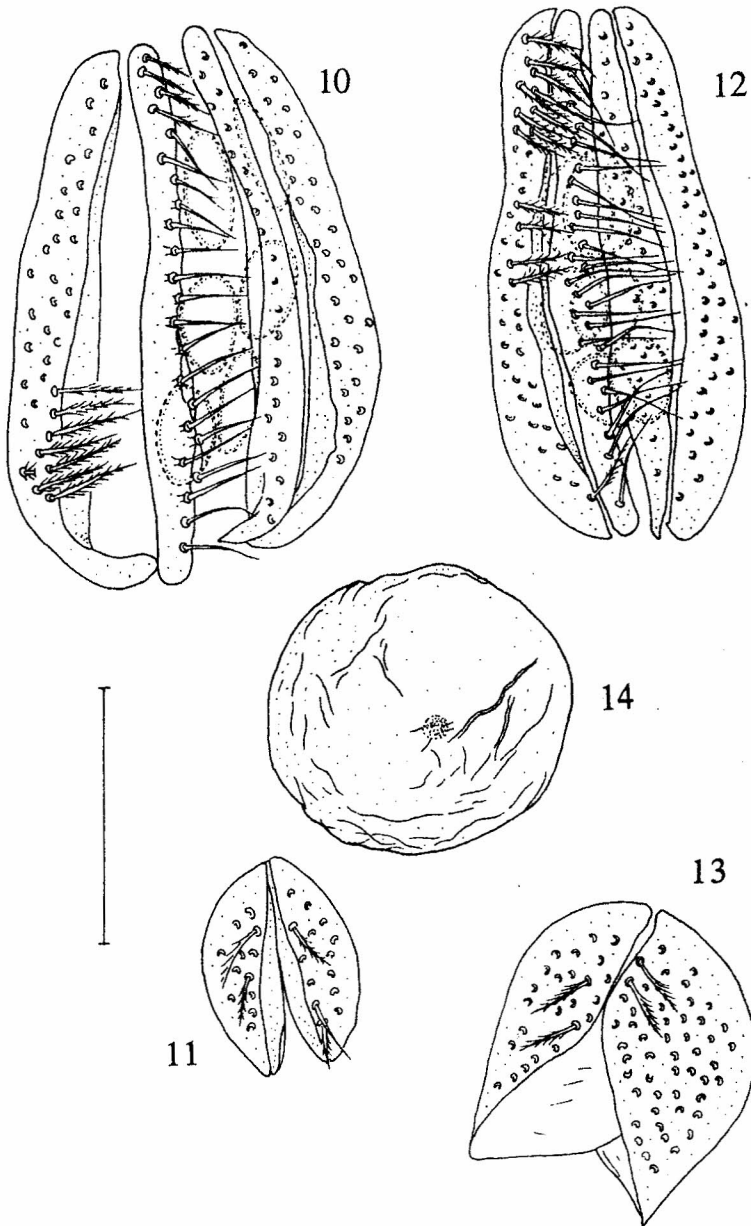
	PL5093 B Hol. Female	PL5091 A Female	PL5092 B Female	PL5092 A Male	PL5093 A Male
LB	1650	1500	1700	1700	1500
WB	1100	950	1050	1100	1100
Tal (L)	204	194	204	219	209
Tal (H)	138	112	133	138	128
Tal L:H	1.48	1.73	1.53	1.59	1.63
Til (L)	138	117	138	143	138
DS (S/P)	13-15/ 5.0-6.5	13-19/ 5.0-6.5	13-16/ 5.0-6.5	13-18/ 5.0-6.5	13-16/ 5.0-6.5
CML/pP	306/102	260/87	305/97	280/97	265/82
DiCt	4+1	4+1	4+1	5+1	4+1
PrCt	5	5?	6	6	6
Rad (Lf/R)	4/7	5/4	4/6	6/4	4/5
Bas (n/L)	1/29	1/27	1/32	1/27	1/29
PaTaSol (T/1)	4/1	4/1	3?/1	4/1	4/1



1-3. *Platytrombidium rafalskii* n. sp., adult: 1 - entire, in transparency, 2 - genu, tibia and tarsus I, setae omitted, 3 - crista metopica region



4-9. *Platytrombidium rafalskii* n. sp., adult: 4 - palp, lateral aspect, setae omitted, 5 - palpal tibia and tarsus, medial aspect, 6 - palpal tibia and tarsus, lateral aspect, 7 - nonsensillary seta, 8 - dorsal opisthosomal setae, 9 - the same, cross section



10-14. *Platytrombidium rafalskii* n. sp., adult: 10-11. Genital-anal region of female: 10 - external genitalia, 11 - anus. 12-13. Genital-anal region of male: 12 - external genitalia, 13 - anus, 14 - egg

General shape of palps typical of the genus too. Palpfemur large and swollen, palpgenu trapezoidal in shape (fig. 4). Palptibia elongate, triangular in outline with long and stout odontus. Medial face bears two ctenidia and a radula (fig. 5). Distal ctenidium composed of a stout paradont and 4-7 strong spinisetae; proximal ctenidium consists of 5-6 considerably weaker and thinner spinisetae. Radula composed of 6-11 relatively short spine-like setae. Lateral face of palpal tibia (fig. 6) bears a very short, stout and apically blunt basidont in the middle between palpal tarsus and odontus bases. At the odontus base in dorso-distal part there arise 2-3 long and smooth, whiplike setae; remaining setae which cover lateral part of palpal tibia are setulose or feather-like. Palpal tarsus oval-cylindrical, covered with numerous, setulose or feather-like setae; apex with five, and lateral side with one solenidion (figs 5, 6).

Idiosoma.

Dorsal side:

Anterior part of crista metopica elongate and slender, fuses with the well sclerotized vertex which bears at least 30 long setulose nonsensillary setae (fig. 7); roundish sensillary area bears two smooth sensillary setae which arise from round sensillary pits; posterior process distinct, relatively wide, of half length of the anterior one. Except for the regular posterior process there is also a minute process which runs posterad to sensillary area. Double eyes sessile, situated on well sclerotized, oval plates at half length of anterior part of crista metopica (fig. 3). Aspidosomal setae vary from relatively long and slender to short, fusiform, and similar to dorsal opisthosomal ones.

Opisthosomal setae of one type and various length, very short, the stem never exceeds 20 μm , irregularly fusiform, some rounded and some very slightly and broadly pointed apically, somewhat narrower at base, all covered with numerous short setulae. All setae round in cross section, based on distinct papillae (figs 8, 9).

Ventral side:

Opisthosoma densely covered with setae similar to the dorsal ones, but much thinner.

Genital-anal region typical of the genus (figs 10, 11). External genitalia consist of a pair of genital- and a pair of para-genital sclerites (centrovalves and epivalves). Para-genital sclerites are longer, broader and curved at their posterior ends and covered densely with numerous setulose setae. Genital sclerites are shorter and narrower and covered mainly with bare setae of similar length as para-genital ones (fig. 10). Anus relatively small, each of its valves covered with few (10-15), short, mainly setulose setae (fig. 11).

Legs much shorter than idiosoma; tarsus I oval-rounded, length/height ratio always less than 1.75; tibia I always shorter than tarsus I, of ca. the same length as the height of tarsus I (fig. 2).

Male.

Generally similar to female. Main differences refer to the genital-anal structure (figs 12, 13). Para-genital sclerites are only slightly curved at posterior ends. Genital sclerites are fusiform, distinctly broadest in the middle, covered with bare setae but

these are longer than the corresponding ones in female (fig. 12). Anus large, twice as big as that in the female, each of its valves covered with numerous (ca. 50) short setulose setae (fig. 13).

Nymph and larva.

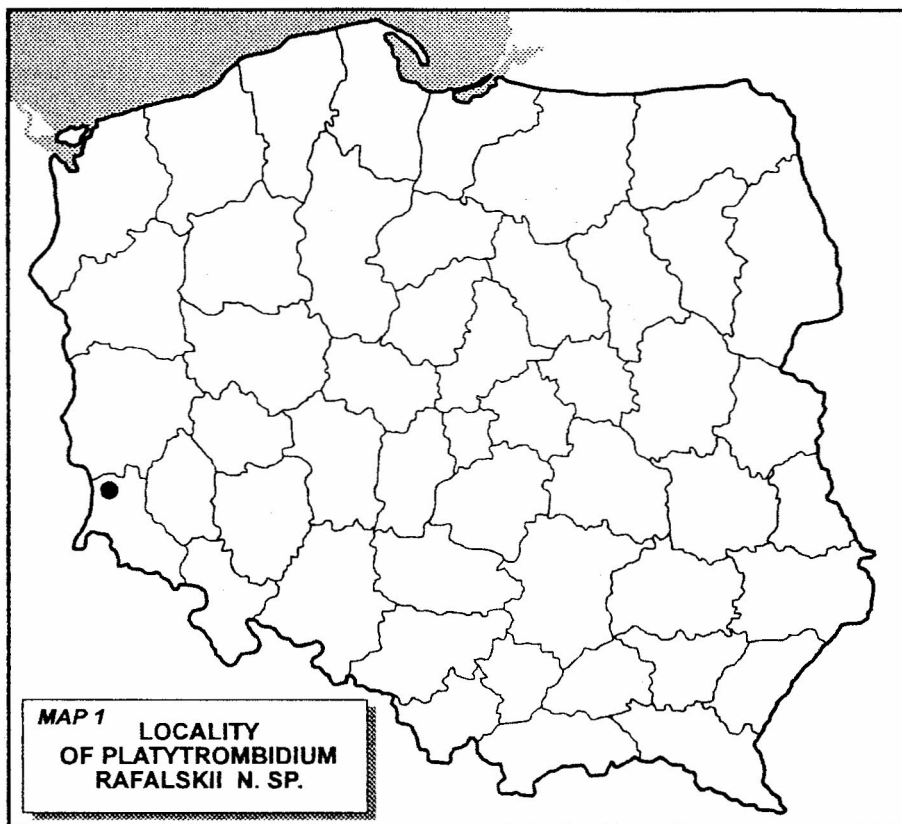
Not known.

ETYMOLOGY

This species is dedicated to the outstanding Polish arachnologist, the late Prof. Dr. Jan RAFALSKI.

DISTRIBUTION

See "Type material" and map 1.



REMARKS ON TAXONOMY

There are 11 postlarval *Platytrombidium* species known from the Palaearctic region hitherto, assuming that one is synonymous and one was erroneously placed in the genus (THOR & WILLMANN 1947, WILLMANN 1954, FEIDER 1955, 1973, ROBAUX 1967, GABRYŚ 1996). Some of the species are known from original descriptions only, while others were redescribed several times. In such cases, in the chronological list of species given below, the best redescriptions are indicated in square brackets.

Platytrombidium sylvaticum (C. L. KOCH, 1835) [BERLESE (1912), THOR & WILLMANN (1947), ROBAUX (1966), GABRYŚ (1996)]

= *Platytrombidium simulans* (BERLESE, 1910)

Platytrombidium vagabundum (BERLESE, 1903) [BERLESE (1912)]

Platytrombidium fusicomum (BERLESE, 1910) [ROBAUX (1967), GABRYŚ (1996)]

Platytrombidium trispinum (BERLESE, 1910) non COOREMAN (1949) [BERLESE (1912)]

Platytrombidium oudemansianum (FEIDER, 1948) [FEIDER (1955)]

Platytrombidium transsylvanicum (FEIDER, 1950) [FEIDER (1955)]

Platytrombidium curtipilosum (SCHWEIZER, 1951) [suppl. by SCHWEIZER & BADER (1963)]

Platytrombidium obtusipilus (FEIDER, 1955) **stat. nov.**

Platytrombidium mongolicum (FEIDER, 1973) **comb. nov.**

Platytrombidium altaicum (FEIDER, 1973) **comb. nov.**

Platytrombidium longimaculatum (FEIDER, 1973) **comb. nov.**

Platytrombidium sylvaticum is a well known European species mentioned in many papers. *Platytrombidium simulans* (BERLESE, 1910) was considered a synonym of *P. sylvaticum* by THOR (1936) and THOR & WILLMANN (1947). In my opinion, *P. simulans* mentioned in later papers (e. g. SCHWEIZER 1951, SCHWEIZER & BADER 1963) should be treated as a synonym of *P. sylvaticum*, too. *Platytrombidium sylvaticum* differs from *P. rafalskii* n. sp. in many features: it also has one basidont but a long (60-90) and slender one and placed at the palpal tarsus base, it has a greater number of spines in proximal ctenidium (7-9) and spine-like setae composing radula (8-10), opisthosomal setae are longer (ca. 25) and conspicuously pointed apically, tarsus I is much longer (290-385) and ratio TaI L:H always exceeds 2.0, palpal tibia is considerably longer (200-280). *Platytrombidium vagabundum* is known from Italy and Hungary (BERLESE 1912, THOR & WILLMANN 1947, GABRYŚ & MAŁOL 1996). THOR & WILLMANN (1947) did not take into consideration the data from BERLESE's (1912) work included in "Osservazioni" (op. cit., p. 164-166) where the author corrected and supplemented his original description (BERLESE 1903). Considering BERLESE's (1912) data and unpublished observations on two specimens listed from Hungary (GABRYŚ &

MAKOL 1996), *P. vagabundum* differs from *P. rafalskii* n. sp. in number (2-4), length (60-100) and position of basidonts which are always situated at the base of palpal tarsus, length (23-45) and shape of opisthosomal setae, which, at least in part, are conspicuously pointed apically, length of tarsus I (310-350), length of tibia I (220) and ratio TaI L:H which always exceeds 2.0. *Platytrombidium fusicomum* known from the whole of Europe is closely related to *P. rafalskii* n. sp. It has very similar opisthosomal setae, however slightly more oval-cylindrical and broadened at base, and the ratio TaI L:H always less than 2.0. The main difference refers to the structure, length and position of the basidont. It is slender, at least twice longer (60-70) and always situated at the base of palpal tarsus. *Platytrombidium trispinum*, originally briefly described as *Microtrombidium (Enemothrombium) simulans* var. *trispinum* n. var. (BERLESE, 1910) and then completely described and figured as *Microtrombidium simulans* var. *trispinum* (BERLESE, 1912), is known only from Germany (Hamburg). THOR (1936) raised it to the species rank. ROBAUX (1967) considered COOREMAN'S (1949) interpretation of *P. trispinum* to be the best one. In my opinion COOREMAN (op. cit.) erroneously determined his specimens from Belgium. Many characters, like body coloration, palpal tibia structure and shape of opisthosomal setae show that *P. trispinum* s. COOREMAN (1949) is a misidentified *Microtrombidium fasciatum* (C. L. KOCH, 1836). Thus, the only sufficient description of *P. trispinum* has been presented by BERLESE (1912), hitherto. According to his interpretation *P. trispinum* differs from *P. rafalskii* n. sp. in number (3) and position of basidonts which are always situated at the base of palpal tarsus, number of spines composing distal ctenidium (7) and spine-like setae composing radula (10-11), length (ca.30) and shape of opisthosomal setae, which are similar to that of *P. sylvaticum* i. e. regularly fusiform and conspicuously pointed apically, length of tarsus I (410), height of tarsus I (210) and length of tibia I (280). *Platytrombidium oudemansianum*, placed by FEIDER (1952, 1955) in *Atractothrombium*, known only from Romania, has long and slender basidont situated at the base of palpal tarsus and very characteristic opisthosomal setae which are short (11-15 without papilla), oval or fusiform but based on very thin, and relatively long peduncles. The peduncle is as long as the calyciform papilla (ca. 7). Some of the setae are bent at the point of seta stem and peduncle connection. *Platytrombidium transsylvanicum*, placed by FEIDER (1952, 1955) in *Atractothrombium*, is known from Romania. This species differs from *P. rafalskii* n. sp. in shape and position of basidont which is long, slender and situated at the base of palpal tarsus, shape of opisthosomal setae whose stems are considerably broadened at proximal part, height of tarsus I (84-88) and much greater ratio TaI L:H which amounts to 2.5-2.7. *Platytrombidium curtipilosum*, originally described as *Microtrombidium platychirum* BER. var. *curtipilosum* n. var. (SCHWEIZER, 1951) from Switzerland was raised to the species rank and placed in *Platytrombidium* by ROBAUX (1967). In the original description, the palp, opisthosomal setae, tarsus, tibia and genu I were figured. SCHWEIZER & BADER (1963), illustrated also the general habitus, crista metopica region and the chelicera. Some characters, like body size (594-600 LB, 340-360 WB), palpal tibia structure (only one ctenidium), tarsus I measurements (145 L,

95-108 H), shape of tarsus I (TaI L:H = 1.46) indicate, that the only individual that served as the basis for the description of *P. curtipilosum* was a nymph. It is impossible to compare nymphs with adults basing on metric and meristic features only, but two structural characters distinguish *P. rafalskii* n. sp. from *P. curtipilosum*. The latter one has very narrow, fusiform, pointed apically opisthosomal setae and crista metopica without posterior process. *Platytrombidium obtusipilus* described originally as *Enemotrombidium sylvaticum* var. *obtusipilus* n. v. (FEIDER, 1955) and transferred to *Platytrombidium* by ROBAUX (1967), is known exclusively from Romania. This species differs from *P. rafalskii* n. sp. in length (22-29) and shape of opisthosomal setae which are very slender, pointed apically and less setulose. Moreover *P. obtusipilus* is smaller (1150 LB), has more setae in proximal ctenidium (8), and its ratio TaI L:H figures 2.25. FEIDER (1973) described three species from Mongolia and placed them in *Atractotrombidium*: *mongolicum*, *altaicum* and *longimaculatum*. All these species differ distinctly from *P. rafalskii* n. sp. *P. mongolicum* has also short basidont but placed at the base of palpal tibia, very long and thin paradont, only 3 spinisetae composing distal ctenidium and 3 spine-like setae composing radula. Opisthosomal setae are similar to those in *P. rafalskii* n. sp. but their length is more varied (11-29) and they seem to be less setulose. Tarsi I are very long (246) and narrow (70), so ratio TaI L:H is high and amounts to 3.5. *Platytrombidium altaicum* has short and curved basidont, placed at the base of palpal tibia, opisthosomal setae in part similar to *P. rafalskii* n. sp., but some of them are of "sylvaticum" type, distinctly pointed apically, all considerably vary in length (15-44). Tarsi I of females are very long (246-304) and very narrow (70), so ratio TaI L:H is extremely high and ranges from 3.5 to 4.3; data for male tarsi given in table 1 (FEIDER 1973) do not correspond with figure 31 (op. cit.), so, as uncertain, they are not discussed here. *P. longimaculatum* is similar to *P. rafalskii* n. sp., in having extremely short basidont but situated at the base of palpal tarsus, similarly developed opisthosomal setae, but longer (29-64) and some of them not fusiform but oval in shape. Remarkable is the length of posterior process of crista metopica, which is the same as that of anterior process.

THOR (1936) included in his newly founded *Platytrombidium* six species: *vagabundum*, *fusicomum*, *sylvaticum* (= *simulans*), *trispinum*, *quadrispinum* (BERLESE, 1910) and *platychirum* (BERLESE, 1912). THOR & WILLMANN (1947) synonymized *P. quadrispinum* with *P. insulanum* (OUDEMANS, 1901) and left both species: *platychirum* and *insulanum* (= *quadrispinum*) in *Platytrombidium*. Although relationships among *platychirum*, *quadrispinum* and *insulanum* have not been studied sufficiently yet, the structure of their opisthosomal setae shows that all species belong to *Microtrombidium* rather than to *Platytrombidium* (OUDEMANS 1901, BERLESE 1912, ROBAUX 1967). So were *platychirum* and *quadrispinum* treated by ROBAUX (1967), however, for unknown reasons he completely ignored *insulanum* in the "Critical list". *Platytrombidium homocomum* BERL. var. *moravica* nov. var. was described by WILLMANN (1954) from the present territory of Czech Republic. ROBAUX (1967) did not mention this species in his "Critical list", neither under *Platytrombidium* nor under *Microtrombidium*. It is noteworthy that *Microtrombidium homocomum* BERLESE,

1918 (transferred to *Platytrombidium* by THOR & WILLMANN 1947), which was described very briefly from central Mexico has never been illustrated, so no comparison with other species can be done until the type material is studied. The structure of palpal tibia of *P. homocomum* var. *moravicum* resembles that of *V. major* (HALBERT, 1920) in shape, number of spinisetae composing the single (!) ctenidium (7), lack of radula instead of which there is one setulose (!) seta. Palpal tarsus is very short (28) and "sharpened" apically, which is very characteristic for *Valgothrombium*. Also the shape and length (ca. 30) of opisthosomal setae, length of the body (1300), length of tarsus I (174), height of tarsus I (100) and length of tibia I (100) are within the range of *V. major* (ROBAUX 1967, GABRYŚ 1996). In my opinion WILLMANN'S (1954) description shows that his specimen (1 "pregnant" female) was wrongly identified and should be treated as *Valgothrombium moravicum* (WILLMANN, 1954) **comb. nov., stat. nov.** Unfortunately, neither BERLESE (1918) describing *M. homocomum*, nor WILLMANN (1954) describing *P. homocomum* var. *moravicum* gave a single word about crista metopica. Only after examining this structure one can state indisputably to what genus *moravicum* in fact belongs.

KEY TO THE PALAEARCTIC *PLATYTROMBIDIUM* (ADULTS)

Platytrombidium curtipilosum (SCHWEIZER, 1951) is excluded since it is known only from nymphal stage.

- 1(18) Lateral face of palpal tibia with one basidont 2.
 2(3) Opisthosomal setae stem with long and thin peduncle
 *P. oudemansianum*
 3(2) Opisthosomal setae stem without peduncle 4.
 4(9) At least some of opisthosomal (dorsal) setae regularly fusiform, narrowing basally and distally, distinctly pointed apically 5.
 5(6) Only part of opisthosomal (dorsal) setae distinctly pointed apically (the others rounded), proximal ctenidium of palpal tibia composed of 4 spinisetae, length/height ratio of tarsus I of females always more than 3.5 *P. altaicum*
 6(5) All opisthosomal (dorsal) setae distinctly pointed apically, proximal ctenidium of palpal tibia composed of 7-9 spinisetae, length/height ratio of tarsus I of adults never exceeds 3.0 7.
 7(8) Tibia I short (ca. 130), radula composed of 4 spine-like setae *P. obtusipilus*
 8(7) Tibia I long (200-280), radula composed of 8-10 spine-like setae ... *P. sylvaticum*
 9(4) All opisthosomal (dorsal) setae irregularly fusiform, oval or oval-cylindrical, rounded or only slightly and broadly pointed apically 10.
 10(11) Length/height ratio of tarsus I very high (ca. 3.5), paradont very long and narrow *P. mongolicum*
 11(10) Length/height ratio of tarsus I never exceeds 2.7, paradont normally developed 12.

- 12(13) Length/height ratio of tarsus I more than 2.5, opisthosomal (dorsal) setae very short (ca. 15) *P. transylvanicum*
- 13(12) Length/height ratio of tarsus I always less than 2.2, opisthosomal (dorsal) setae longer 14.
- 14(15) Opisthosomal (dorsal) setae long (29-64), posterior process of crista metopica as long as anterior one (rod), basidont very short and situated at palpal tarsus base *P. longimaculatum*
- 15(14) Opisthosomal (dorsal) setae short (never exceed 20), posterior process of crista metopica shorter than 2/3 length of anterior one (rod), basidont different 16.
- 16(17) Basidont very short (27-32), and situated in the middle between palpal tarsus and odontus bases *P. rafalskii* n. sp.
- 17(16) Basidont long (60-70) and situated at the palpal tarsus base *P. fusicomum*
- 18(1) Lateral face of palpal tibia with at least two basidonts 19.
- 19(20) All opisthosomal (dorsal) setae distinctly pointed apically, tibia I longer than 275 *P. trispinum*
- 20(19) Only part of opisthosomal (dorsal) setae distinctly pointed apically (the others very slightly and broadly pointed apically or rounded), tibia I shorter than 225 *P. vagabundum*

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