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NEW RECORDS OF MITES (ACARI: PROSTIGMATA: CALYPTOSTOMATIDAE, ERYTHRAEIDAE, TROMBIDIIDAE, MICROTROMBIDIIDAE) FROM THE CZECH REPUBLIC, WITH A DESCRIPTION OF *PODOTHROMBIUM KARLOVAICUS* N. SP.

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Abstract. ***Allothrombium reinholdi*, *Balaustium nikae*, *Charletonia cardinalis*, *Compsothrombium absoloni*, *Erythraeus* (*E.*) *kuyperi*, *Hauptmannia brevicollis*, *H. longicollis*, *H. wratislaviensis*, *Podothrombium kordulae, P. roari*, *P. tymoni* and are new to the fauna of the Czech Republic. *Podothrombium karlovaicus* n. sp. is described. Additional measurements for *Balaustium nikae* based on specimens from the Czech Republic and Slovakia are given.**

■ **Acari, Calyptostomatidae, Erythraeidae, Microtrombidiidae, Trombidiidae, new species, faunistics, Czech Republic.**

INTRODUCTION

In the Czech Republic the mites belonging to the families Erythraeidae, Trombidiidae, Microtrombidiidae, Johnstonianidae, Eutrombidiidae, Trombellidae, Tanaupodidae, Neothrombiidae and Calyptostomatidae based on adults are relatively well known. However, the species based on larvae are known very poorly. Until now 61 species belonging to the families above mentioned were stated, but only three species are based exclusively on larvae. They are *Balaustium affine* WILLMANN, 1954, *B. bulgariense* OUDEMANS, 1926, *B. murorum* (HERMANN, 1804), *Phanolophus oedipodarum* (FRAUENFELD, 1868) (as *P. nasica* ANDRÉ, 1927), *Abrolophus tardus* (HALBERT, 1915), *Leptus absoloni* WILLMANN, 1954, *L. longispinosus* (BERLESE), *L. nemorum* (C. L. KOCH, 1836), *L. rubricatus* (C. L. KOCH, 1837), *L. trimaculatus* (C. L. KOCH, 1837) (Erythraeidae), *Dolichotrombium longulum* (WILLMANN, 1950) (as *Dinothrombium longulum* WILLMANN, 1950), *Paratrombium purpureum* (C. L. KOCH, 1837) [as *Dinothrombium purpureum* (C. L. KOCH, 1837)], *Trombidium heterotrichum* (BERLESE, 1910), *T. holosericeum* (LINNAEUS, 1758), *T. kneissli* (KRAUSSE, 1915), *T. mediterraneum* (BERLESE, 1910), *T. monoeciportuense* (ANDRE,1927), *T. rimosum* C. L. KOCH, 1837, *Allothrombium fuligineum* OUDEMANS, 1905, *A. fuliginosum* (HERMANN, 1804), *A. ignotum* WILLMANN, 1956, *A. minutissimum* WILLMANN, 1956, *A. molliculum* (C. L. KOCH, 1837), *A. subtile* DANIEL, 1955, *Podothrombium filipes* (C. L. KOCH, 1837), *P. montanum* BERLESE, 1910 (as *P. blanci* SCHWEIZER, 1922)(Trombidiidae), *Trombella otiorum* BERLESE, 1902 (Trombellidae), *Johnstoniana*

errans (JOHNSTON, 1852), *J. insignia* (BERLESE, 1917), *Diplotrombium longipalpe* (BERLESE, 1887), *D. carpaticum* (ŠTORKAN, 1938), *Centrotrombidium schneideri* KRAMER, 1896 (Johnstonianidae), *Eutrombidium odorheiense* FEIDER, 1938, *E. trigonum* (HERMANN, 1804) (Eutrombidiidae), *Heterotrombidium sanremense* (OUDEMANS, 1910)*Microtrombidium pusillum* (HERMANN, 1804) [as *Elahistothrombium parvum* (OUDEMANS, 1913)], *Camerotrombidium rasum* (BERLESE, 1910), *C. sanguineum* (C. L. KOCH, 1837), *C. fusiforme* WILLMANN, 1956, *Valgothrombium major* (HALBERT, 1920), *Platytrombidium fasciatum* (C. L. KOCH, 1836) [as *Microtrombidium fasciatum* (C. L. KOCH, 1836)], *M. kochi* OUDEMANS, 1937, *M. philogeum* (C. L. KOCH, 1837), *M. cardatum* (C. L. KOCH, 1835), *Campylotrombium clavatum* (GEORGE, 1909) (as *Campylotrombium boreale* BERLESE, 1910 and *C. langhofferi* KRAUSSSE, 1916), *Willmanella franzi* WILLMANN, 1950 (as *Campylotrombium franzi* WILLMANN, 1950), *Echinothrombium rhodinum* (C. L. KOCH, 1837), *E. spinosum* (CANESTRINI, 1885), *Dactylothrombium pulcherrimum* (HALLER, 1882) [as *Georgia pulcherrina* (HALLER, 1882)], *Platytrombidium fuscicomum* (BERLESE, 1910) [as *Atractothrombium fuscicomum* (BERLESE, 1910)], *P. sylvaticum* (C. L. KOCH, 1835) [as *Enemothrombium sylvaticum* (C. L. KOCH, 1835)], *P. vagabundum* (BERLESE, 1903) [as *E. vagabundum* (BERLESE, 1903)], *P. trispinum* (BERLESE, 1910) [as *E. trispinum* (BERLESE, 1910)], *Valgelephantia homocomum* (BERLESE, 1918) (as *Enemothrombium homocomum* var. *moravica* (WILLMANN, 1954), *Enemothrombium bifoliosum* (CANESTRINI, 1910) [as *Eutrichothrombium oltenicum* (FEIDER, 1955)], *Trichotrombidium muscarum* (RILEY, 1878) (Microtrombidiidae), *Rhinothrombium nemoricola* (BERLESE, 1886) (Tanaupodidae), *Neothrombium neglectum* (BRUYANT, 1909) (Neothrombiidae) and *Calyptostoma velutinum* (O. F. MÜLLER, 1776) (Calyptostomatidae) (Daniel 1955, 1959; Willmann 1954, 1956; Gabrys 1999). In this paper 11 new species are noted for the first time in the Czech Republic and *Podothrombium karlovaicus* n. sp. based on larvae is described.

In the world among the genus *Podothrombium* only 14 species based on larvae were known. In Europe *P. svalbardense* OUDEMANS, 1928, *P. pyriformis* ROBAUX et SCHIESS, 1982, *P. crassicristatum* FEIDER, 1968, *P. tymoni* HAITLINGER, 1994, *P. proti* HAITLINGER, 1994, *P. verae* HAITLINGER, 1995, *P. dariae* HAITLINGER, 1995, *P. tersonderi* HAITLINGER, 1995, *P. kordulae* HAITLINGER, 1995, *P. rigobertae* HAITLINGER, 1995, *P. roari* HAITLINGER, 2000. In Novák America *P. sylvicolum* ZHANG et JENSEN, 1995 and *P. shellhammeri* ROBAUX, 1977, and in Asia *P. paucisetarum* ZHANG et XIN, 1984 (Oudemans 1930; Feider 1968; Robaux 1977; Robaux et Schiess 1982; Zhang et Xin 1989; Zhang et Jensen 1995; Haitlinger 1994, 1995, 2000; Fain et Ripka 1998).

A b b r e v i a t i o n s: The following abbreviations used in the text are:IL, length of idiosoma; IW, width of idiosoma; AW, distance between centres of bases of AL scutalae; PW, distance between centres of bases of PL scutalae; AA, distance between centres of bases of anterior sensillary setae; SB, distance between centres of bases of posterior sensillary setae; ISD, intersensillary distance between levels of centres of anterior and posterior sensillary setae of scutum; L, length of scutum; W, width of scutum; AP, distance between centres of bases of AL and PL scutalae of the same side; AL, length of anterolateral scutala; PL, length of posterolateral scutala; AM, length of anterior sensillary seta of dorsal scutum; S, length of posterior sensillary seta of dorsal scutum; DS, length of dorsal idiosomal setae; GL, length of gnathosoma measured between bases of palpcoxae and tip of chelicerae; Oc, diameter of eyes; 1a, length of seta between coxae I; 2a, length of seta between coxae II; 1b*, length of distal seta on coxa I; 2b; 1b**, length of proximal seta on coxa I; 2b, length of seta on coxa II; 3b, length of seta on coxa III, PsFd, length of seta on dorsal surface of palpfemur; PsFv, length of seta on ventral surface of palpfemur; PsGd, length of seta on dorsal surface on palpgenu; PsGv, length of seta on ventral surface on palpgenu; sc1, ventral seta on gnathosoma (hypostomala); fD, number of dorsal setae; fV, number of ventral setae (beyond coxae III); NDV, total number of dorsal and ventral setae. Measurements are expressed in micrometers.

SPECIES ACCOUNT

Family Calyptostomatidae OUDEMANS, 1923

Calyptostoma velutinus (O. F. MÜLLER, 1776)
Material: 1 l, Karlova Studánka n. Praděd, 12. 6. 2001.
Distribution: Widely distributed in Europe.

Family Erythraeidae ROBINEAU – DESVOIDY, 1828

Balaustium nikae HAITLINGER, 1996
Material: 1 l, Rohatec n. Hodonin, 15.7.2002
Distribution: Poland, Czech Republic, Slovakia.
This species was known only from a single specimen from Poland. The second specimen I have from the Czech Republic; moreover, I have recently obtained 12 specimens from Slovakia (Čerchov n. Slovenské Nové Město, Královský Chlmec 13.7.01, Bardejov, Trebišov 15. 7. 01) – it is noted for the first time in Slovakia. Measurements for the specimens from the Czech Republic and Slovakia are given in Table 2. *B. nikae* was described with mistake dimension for PL: length of PL is distinctly shorter than in the description, therefore index PL/AL is smaller than in the original (1.36, not 2.36).

Charletonia cardinalis (C. L. KOCH, 1837)
Material: 1 l, Horní Benešov n. Bruntál, 12.6.2001.
Distribution in Europe. Russia (Kaliningrad), Holland, Germany, Czech Republic, Poland, Sweden, Finland. Common species in Middle and North Europe (Southcott 1966, Haitlinger 1987). First record from the Czech Republic.

Erythraeus* (*E.*) *kuyperi (OUDEMANS, 1910)
Material: 1 l, Karlova Studánka, 12.6.2001.
Distribution: Iceland, Germany, Holland, Poland, Czech Republic, Switzerland. Probably rare species; until now it is known from only a few localities (Oudemans 1910, Sellnick 1940, Haitlinger 1987b). First record from the Czech Republic.

Hauptmannia brevicollis OUDEMANS, 1910
Material: 11 l, Otovice n. Broumov, 7. 7. 2000, 5 l, Broumov, 18.6.2000, 7 l (1 l on larva of Homoptera), Dolní Adršpach n. Teplice, 18. 6. 2001, 2 l, Vrchlabí, 18.6.2001, 1 l, Sekerské Chalupy n. Mariánské Lázně, 28. 6. 2001, 1 l, Karlova Studánka n. Praděd, 12. 6. 2001, 3 l, Horní Benešov n. Bruntál, 12. 6. 2001, 2 l, Františkovy Lázně, 28. 6. 2001.
Distribution: Austria, Holland, Germany, Czech Republic, Poland, Sweden, Norway, Finland, Russia, Lithuania, Slovakia. *H. brevicollis* is the most common among species of the genus *Hauptmannia*, widely distributed in Europe (Willmann 1952; Haitlinger 2000a, 2002). Also, in the Czech Republic it occurs commonly. First record from the Czech Republic.

Hauptmannia longicollis (OUDEMANS, 1910)
Material: 2 l, Horní Benešov n. Bruntál, 12. 6. 2001.
Distribution: Holland, Czech Republic, Poland, Iceland, Sweden. First record from the Czech Republic. Relatively rare species, not much is known about its distribution and hosts.

Hauptmannia wratislaviensis HAITLINGER, 1986
Material: 1 l, Frantiskovy Lázně, 28. 6. 2001.
Distribution: Iceland, Poland, Czech Republic, Switzerland, Norway, Scotland, Russia (St. Petersburg), Lithuania.

Table 1. Metric data for *Podothrombium karlovaicus* n. sp. H – holotype, P – paratype.

	H	P		H	P
IL	622	489–686	1b*	74	60–78
IW	451	330–527	1b**	62	62–82
AW	80	80–100	2b	74	72–84
PW	102	100–120	3b	62	60–74
L	168	166–200	sc1	56	42–52
W	120	122–140	TaI(L)	118	112–130
ISD	96	88–90	TaI(H)	40	36–44
AA	24	26–30	TiI	84	80–92
AP	26	30–40	GeI	62	60–68
MA	78	74–90	FeI	98	102–116
LN	32	28–42	TrI	50	50–60
ASBa	120	120–152	CxI	96	90–108
ASBp	48	46–56	TaII(L)	100	96–118
AM	64	64–74	TaII(H)	30	26–38
AL	–	60–78	TiII	74	72–82
PL	68	70–80	GeII	52	48–60
S	110	100–132	FeII	92	84–104
SB	48	48–54	TrII	60	44–54
DS	44–60	50–72	CxII	90	96–112
Oc	36	36–44	TaIII(L)	112	110–136
GL	100	102–120	TaIII(H)	26	24–32
LSS	40	34–48	TiIII	92	92–106
HS	26	28–34	GeIII	54	54–64
SL	60	52–62	FeIII	108	104–118
SS	24	18–28	TrIII	52	54–72
PsFd	–	38–42	CxIII	94	98–110
PsGd	–	30–50			

* in original description 52 – mistake dimension; ** in original description 2.36 – mistake value.

This species probably occurs in the whole of North and Middle Europe. It was shown in the recent studies (Haitlinger 2000a, b). First record from the Czech Republic.

Leptus echinopus BERON, 1975
Material: 1 l, Františkovy Lázně, 28. 6. 2001.
Distribution: Bulgaria, Hungary, Czech Republic, Poland, Denmark, Latvia, Slovakia. Common species, probably occurring in the entire Europe.

Family Microtrombidiidae THOR, 1935

Compsothrombium absoloni HAITLINGER, 1998
Material: 1 l, Petrovice n. Hronov, 18. 6. 2000.
Distribution: Poland, Slovakia, Czech Republic. Probably rare species; hitherto was known from Poland (Bieszczady) and North Slovakia (Haitlinger 1998, 2002).

Family Trombidiidae LEACH, 1815

Allothrombium fuliginosum (HERMANN, 1804)
Material: 4 l, Krnov, 12. 6. 2001.
Distribution: It is known from almost the whole of Europe.
This species is common in the Czech Republic and known from many localities (Daniel 1959).

Table 2. Metric data for *Balaustium nikae* Haitlinger; H – holotype, Poland; C – Czech Republic; S – Slovakia (n = 12).

	H	C	S		H	C	S
IL	528	622	362–508	TiI	64	60	56–66
IW	320	362	241–349	GeI	66	56	56–66
AW	28	22	22–28	TfI	34	30	30–34
PW	68	88	44–80	BfI	40	32	34–42
AA	12	8	9–10	TrI	36	32	30–34
SB	12	14	10–14	CxI	50	46	46–54
ISD	52	48	42–52	TaII(L)	54	44	42–50
AP	40	52	26–42	TaII(H)	22	22	22–24
AL	22	20	20–26	TiII	54	46	46–54
ML	26	24	20–26	GeII	50	44	44–50
PL	30*	30	24–30	TfII	28	24	24–28
AM	36	32	34–40	BfII	26	32	26–32
S	54	54	52–62	TrII	32	?	26–34
DS	24–34	26–34	18–34	CxII	52	54	46–58
GL	104	88	84–100	TaIII(L)	56	48	46–56
1a	48	44	38–50	TaIII(H)	20	18	20–22
2a	?	34	26–36	TiIII	68	54	58–64
1b	40	42	30–46	GeIII	56	50	52–60
2b	48	40	32–44	TfIII	36	30	30–38
3b	38	40	32–40	BfIII	36	24	34–36
PsFd	32	30	32–40	TrIII	32	32	30–34
PsFv	40	38	34–42	CxIII	56	52	50–60
PsGd	26	24	20–30	PL/AL	1.36**		
PsGv	28	–	20–28	ISD/AP	1.30		
				TiII/PW	0.79		

* in original description 52 – mistake dimension; ** in original description 2.36 – mistake value.

Allothrombium reinholdi HAITLINGER, 1994

Material: 1 l, Nemyslovice n. Mělník, 27. 6. 2001

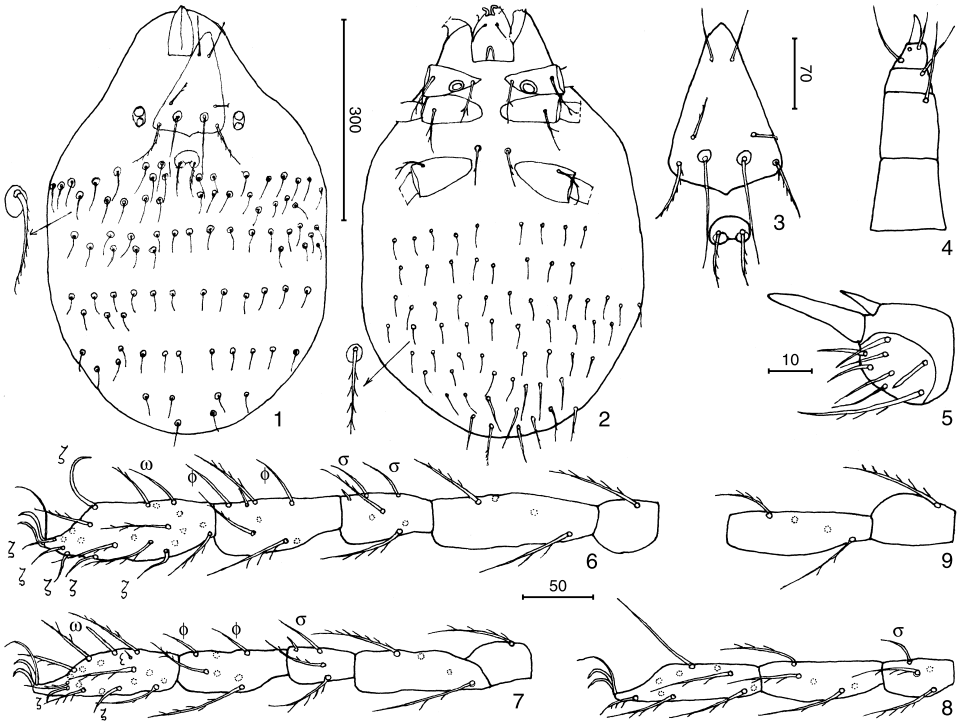
Distribution: Switzerland, Czech Republic. Very rare species, until now known only from two localities (Haitlinger 1994b).

Podothrombium karlovaicus sp. n.

(Figs 1–9)

Diagnosis. The first row of dorsal setae with 22–31 irregular arranged setae; the second row with 14–21 irregular arranged setae; fD = 74–90; fV = 51–65; NDV = 125–149; TaII with ω and ε; ε placed proximally to ω; the length of TaI 112–130 μm.

Description. Idiosoma dorsally with a scutum, a scutellum, a pair of ocular sclerites with two eyes, and 84 weakly barbed setae all placed on small platelets. The first row of dorsal setae bears in holotype 30 setae irregular arranged (22–31 in paratypes). The second row in holotype with 21 setae irregular arranged (14–21 in paratypes). fD = 84 (Fig. 1). Scutum triangular with posterior margin slightly convex. AL and PL setae barbed, AL<PL. AM setae nude. Sensillae S nude, situated between AL and PL. Scutellum with anterior border slightly convex; posterior border concave (Fig. 3). Idiosoma ventrally with two slightly barbed setae between coxae II and III and ~65 slightly barbed setae beyond coxae III, all placed on small platelets. Coxa I with two setae, each with two or three setules. Coxa II and III, each with one or two setules (Fig. 2). Gnathosoma with a pair of



Figs 1-9. ***Podothrombium karlovaicus*** **sp. n., larva. (1) idiosoma and gnathosoma, dorsal view; (2) idiosoma and gnathosoma, ventral view; (3) scutum; (4) palp, dorsal view; (5) palptarsus and tibia, ventral view; (6) leg I, tarsus - trochanter; (7) leg II, tarsus - trochanter; (8) tarsus - genu; (9) femur - trochanter.**

nude hypostomalae (sc1) and a pair of adoral nude setae. Palpal setal formula fPp = 0-1N-1N-N,N,?N-ω,B,N,N,N,N,N,N (Figs 4, 5). Leg I. The setal formula: Ta 1ω, 6ξ, 16B; Ti 2ψ, 1κ, 5B; Ge 2β, 1κ, 4B; Fe 4B; Tr 1B (Fig. 6). Holotype and paratypes all with 6 eupathidia (except one specimen with 5 eupathidia). Leg II. Ta 1ω, 1ε, 2ξ, 15B; Ti 2φ, 5B; Ge 1δ, 1κ, 3B; Fe 4B; Tr 1B (Fig. 7). 10 specimens with 2 eupathidia, 4 specimens with one eupathidium. Leg III. Ta 15B; Ti 5B; Ge 1δ, 3B; Fe 4B; Tr 1B (Fig. 8,9). Ip = 508+468+512 = 1488 holotype. Measurements are given in Table 1.

E t y m o l o g y: Named after the first element of the name of the place where the holotype was collected.

M a t e r i a l: Holotype larva, Czech Republic, Karlova Studánka n. Praděd, 12.6.2001, leg. R. Haitlinger. Mites preserved in Berlese fluid; deposited in the Museum of Natural History, Wrocław University (MNHWU). Paratypes 14 l, with the same data; in author's collection.

R e m a r k s: *P. karlovaicus* n. sp. belongs to the species group bearing anterior transverse row over 16 arranged irregularly setae. To this group belong *P. shellhammeri* ROBAUX, *P. crassicristatum* FEIDER, *P. piriformis* ROBAUX et SCHIESS, *P. svalbardense* OUDEMANS, *P. sylvicolum* ZHANG et JENSEN, *P. kordulae* HAITLINGER and *P. rigobertae* HAITLINGER. *P. karlovaicus* differs from all the above mentioned species by the presence in the first dorsal row 22–31 setae (31, 30, 30, 29, 28, 28, 24, 24, 22) and in the second row 21 setae in holotype (paratypes: 21, 19, 19, 18, 18, 18, 18, 15, 14)(in

the remaining species maximal 15 setae). For both these rows number of the setae are between 40–49. Moreover, from *P. shellhammeri* it differs by NDV (150 vs ~96), Ip (1488 vs 2290), shorter TaI (118–130 vs 255) and PL (68–80 vs 102–120); from *P. crassicristatum* by NDV (150 vs ~104), Ip (1488 vs 1136), longer PL (68–80 vs 52–60) and AM (64–74 vs 46–58); from *P. piriformis* by (II placed before $_{\varepsilon}$II, in *P. piriformis* placed beyond $_{\varepsilon}$II, number of eupathidia on TaI (5–6 vs 10–16) ad Ip (1488 vs 1145); from *P. svalbardense* by $_{\varepsilon}$I placed in Ľ of length TaI from its proximal border, in *P. svalbardense* it placed about the middle of tarsus and NDV (150 vs 120); from *P. sylvicolum* by NDV (150 vs not more than 85), Ip (1488 vs 1601–1679) and the number of eupathidia on TaI (5–6 vs 11–18); from *P. kordulae* by longer W (120–140 vs 104–112), AW (80–100 vs 76–80) and NDV (150 vs below 100); from *P. rigobertae* by only 2δ on GeI, *P. rigobertae* has 3δ, one ωI vs 2ωI, shorter SB (48–54 vs 60), longer TiI (80–92 vs 74) and TiIII (92–106 vs 80).

Podothrombium kordulae HAITLINGER, 1995

Material: 1 l, Broumov, 18.6.2000, 8 l, Krnov, 12. 6. 2001, 3 l, Karlova Studánka n. Praděd, 12. 6. 2001, 5 l, Sekerské Chalupy, 28.6.2001, 2 l, Františkovy Lázně, 28. 6. 2001,
Distribution: Germany, Czech Republic, Poland, Slovakia, Russia (St. Petersburg). Up to date, this species was rarely noted (Haitlinger 1995, 2000a; Makol 1998), but in the Czech Republic is probably relatively numerous.

Podothrombium roari HAITLINGER, 2000

Material: 1 l, Františkovy Lázně, 28. 6. 2001.
Distribution: Norway, Lithuania, Poland, Czech Republic. Rare species, probably restricted to Middle and North Europe (Haitlinger 2000a, 2001).

Podothrombium tymoni HAITLINGER, 1994

Material: 1 l, Broumov, 18. 6. 2000, 1 l, Špindlerův Mlýn, 18. 6. 2000, 5 l, Horní Benešov n. Bruntál, 12. 6. 2001, 6 l, Harrachov, 27.6.2001, 3 l, Nové Teplice n. Lubenec, 27. 6. 2001.
Distribution: Austria, Poland, Czech Republic. Up to now rarely collected species (Haitlinger 1994a, 1995). Probably relatively numerous in North Bohemia.

Trombidium holosericeum (LINNAEUS, 1758)

Material: 6 l (1 from larva of Homoptera), Svoboda n. Úpou, 7. 7. 2000, 1 l (from larva of Homoptera), Otovice n. Broumov, 7.7.2000, 1 l, Dolní Adršpach, 18. 6. 2000, 1 l, Vrchlabí, 18. 6. 2000, 1 l, Špindlerův Mlýn, 18.6.2000, 1 l, Horní Benešov n. Bruntál, 12. 6. 2001.
Distribution: Species known from most of the European countries (Makol 2000). The most common species among Trombidiidae in Europe. Earlier known from some localities in the Czech Republic (Willmann 1956, Daniel 1959).

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