

New Records of Mites (Acari: Prostigmata: Calyptostomatidae, Erythraeidae, Trombidiidae) from Montenegro, with a Description of a New Species

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Abstract: A larvae of a new species of *Leptus* from Montenegro, *Leptus (Leptus) biljanae* Šundić & Haitlinger sp. n., is illustrated and described on the basis of larvae collected from an unidentified orthopteran host. In addition, *Calyptostoma velutinum* (Müller, 1776) and *Allothrombium wolmari* Haitlinger, 2000 are reported for the first time for the fauna of Montenegro.

Keywords: *Leptus*, larva, ectoparasite, taxonomy, new species

Introduction

The fauna of terrestrial Parasitengona of Montenegro is poorly studied. Hitherto only fourteen species of the families Chyzeriidae, Erythraeidae, Microtrombidiidae, and Trombidiidae have been reported from Montenegro: *Parawenhoekia seadi* Saboori, Pešić & Hakimitabar, 2008, *Erythraeus (Zaracarus) budapestensis* Fain & Ripka, 1998, *E. (Erythraeus) ankaraiicus* Saboori, Çobanoglu & Bayram, 2004, *E. (Z.) cf. ueckermanni* Saboori, Nowzari & Bagheri-Zenouz, 2004, *Abrolophus kotorensis* (Haitlinger, 2007), *A. montenegri-nus* Saboori, Šundić & Pešić, 2012, *A. petanovi-cae* Saboori, Šundić & Pešić, 2012, *A. norvegi-cus* (Thor, 1900) (= *Hauptmannia striata* Saboori, Šundić & Pešić, 2011), *A. quisquiliaris* (Hermann, 1804) (= *Abrolophus pseudolongicollis kiejstuti* Haitlinger, 2007), *Leptus josifovi* Beron, 1975, *Moldoustium haitlingeri* Noei, Saboori & Šundić, 2013, *Eutrombidium djordjevici* Saboori & Pešić, 2006, *Arknotrombium arknesianum* Haitlinger, 2007 and *Allothrombium pulvinum* Ewing, 1917 (SABOORI & PEŠIĆ 2006a, b, HAITLINGER 2007, 2012, SABOORI *et al.* 2008, 2011, 2012, WOHLTMANN & MAKOL

2012, ŠUNDIĆ & PAJOVIĆ 2012, NOEI *et al.* 2013). In this paper, a new species of *Leptus* is described and *Allothrombium wolmari* Haitlinger, 2000 and *Calyptostoma velutinum* (Müller, 1776) are recorded for the first time for the fauna of Montenegro. With these three taxa, the number of the terrestrial Parasitengona of Montenegro reaches 17.

Material and methods

The examined specimens of mites were collected by M. Šundić and Biljana Šundić in Montenegro during 2011-2013. The specimens were collected from herbaceous plants as well as from an unidentified orthopteran insectusing. They were preserved in 75% ethanol. Mite specimens were cleared in Nesbitt's solution and mounted in Hoyer's medium (WALTER & KRANTZ 2009). All measurements are given in micrometers (µm) and calculated using a Carl Zeiss Axioscope A1 microscope with software Carl Zeiss Imaging System Axio Vision Release 4.7. The terminology of the structures and setal notation for erythraeids follows SOUTHCOTT (1992) and

Haitlinger (1999a). The type specimens are deposited in the Museum of Natural History of Podgorica (Montenegro).

Results

Family Trombidiidae Leach, 1815

Genus *Allothrombium* Berlese, 1903

Allothrombium wolmari Haitlinger, 2000

Material: Fifteen larvae from herbaceous plants from meadows in Plavnica, Montenegro, 19 May 2011.

Hitherto this species was known from Poland (Haitlinger 2000).

Family Calyptostomatidae Oudemans, 1923

Genus *Calyptostoma* Cambridge, 1875

Calyptostoma velutinum (Müller, 1776)

Material: Three larvae from herbaceous plants from meadows in Bijelo Polje, Montenegro, 02 VIII 2011.

Hitherto this species was known from Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Japan, Lithuania, Madeira, Malaya, Norway, Poland, Romania, Russia, Slovenia, Sweden, Switzerland and the Netherlands (BERON 2008, MAKOL & WOHLTMANN 2012).

Family Erythraeidae Robineau-Desvoidy, 1828

Genus *Leptus* Latreille, 1796

Leptus (Leptus) biljanae Šundić & Haitlinger sp. n.

(Figs 1-8; Table 1)

Diagnosis: One palpgenuala, four setae between coxae II – III, NDV = ~158, AW 87-98, Ti I 125-132, Ti III 152-162.

Description (based on holotype and two paratypes, larvae):

Idiosoma longer than wide. Dorsal surface of idiosoma with ~120 barbed setae in irregular transverse rows, 37-49 µm long (Fig. 2). Single eyes on circular sclerites located at level of posterior part of scutum. Scutum with concave anterior margin and distinctly barbed scutalae. Sensilla ASE and PSE, both with barbs on their 1/3 distal lengths (one ASE was broken in holotype, in paratypes both ASE were broken). Anterior and lateral part of scutum punctate. Scutum bearing two pairs of scutalae (AL and PL) similar in length (Fig. 5); AL setae are nude in ¼ of its entire length and PL covered with setules evenly distributed along the entire stem. Posterior part of scutum with cuticular lines laterally.

Ventral surface of idiosoma with pair of setae *1a*, pair of setae *2a* and four setae between coxae II and III, all barbed; anterior setae shorter (30 µm) than posterior ones (38 µm). Behind coxae III, 38 barbed setae (Fig. 1). NDV = ~158. Coxalae I–III all barbed.

Gnathosoma long, with nude long posterior hypostomalae and shorter nude anterior hypostomalae (Fig. 3). One pair of galealae with small setules and pointed. Palp femur and palp genu with one setulose seta. Palp tibia with two barbed setae and one smooth spine-like seta located close to odontus base. Palptarsus with eight setae: six setae nude (including ω and ζ), one seta slightly barbed and one seta near ζ covered with distinct setules (Fig. 4).

Leg setal formula:

Leg I: Ta 1ω, 2ζ, 25B; Ti 2φ, 1κ, 15B; Ge 1σ, 1κ, 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Fig. 6).

Leg II: Ta 1ω, 2ζ, 24B; Ti 2φ, 15B; Ge 1κ, 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Fig. 7).

Leg III: Ta 1ζ, 24B; Ti 1φ, 15B; Ge 8B; Tf 5B; Bf 1B; Tr 1B; Cx 1B (Fig. 8).

Etymology: This species is named after Biljana, the wife of the senior author.

Type material: The holotype (1a) and paratypes (1b, 1c) larvae were collected by Miloje and Biljana Šundić from an unidentified orthopteran insect, 23.09.2013, in Župa, Nikšić, Montenegro. The holotype and paratypes are deposited in the Museum of Natural History of Podgorica (Montenegro).

Remarks: *Leptus (Leptus) biljanae* belongs to the species group with one palpfemorala, one palpgenuala, four setae between coxae II – III, fD > 100 and Ti III 130-180 µm. This group includes: *L. (L.) meloidarum* Beron, 1975, *L. (L.) milipedi* Southcott, 1992, *L. (L.) killingtoni* Turk, 1945, *L. (L.) grossi* Southcott, 1999, *L. (L.) clelandi* Southcott, 1999, *L. (L.) clavatus* Southcott, 1999 and *L. (L.) gyas* Fain & D'Amico, 1997 (Turk, 1945, Beron, 1975, Southcott, 1992, 1999, Fain & D'Amico, 1997). Measurements for *L. (L.) meloidarum* and *L. (L.) killingtoni* were given by Southcott, (1992), Haitlinger (1999b, 2006) and Lorenzo-Carballe et al. (2011). It differs from *L. (L.) meloidarum* in the shorter AW (87-98 vs. 100-110), AA (9-10 vs. 12-15), SB (14-18 vs. 7-8), AP (11-13 vs. 16-24), L (85-93 vs. 108-122), PsFd (63-67 vs. 70-80), PsGd (48-53 vs. 60-68), Ti I (125-132 vs. 140-158), Ti III (152-162 vs. 174-192), L/W (0.67-0.70 vs. 0.73-1.08), fn Ta I-III (25-24-24 vs. 20-22-20) and fn Ti II Ti III (15-15 vs. 14-14); from *L. (L.) milipedi* in fD (120 vs. 162), fV (38 vs. 57), the shorter AA (9-10 vs. 16-19), SB (7-8 vs. 16-19), AP (11-13 vs. 18-24), L (85-93 vs. 97-111), longer AL (63-67 vs. 47-58),

Table 1. Metric data of *Leptus (Leptus) biljanae* ŠUNDIĆ & HAITLINGER sp. n. (larvae)

Character	Holotype (1a)	Paratype (1b)	Paratype (1c)	Range	Character	Holotype (1a)	Paratype (1b)	Paratype (1c)	Range
IL	390	590	551	390-590	Ti I	132	125	127	125-132
IW	301	432	354	301-432	Ge I	97	94	92	92-97
AW	94	87	98	87-98	Tf I	73	68	69	68-73
PW	115	105	117	105-117	Bf I	79	73	72	72-79
AA	10	10	9	9-10	Tr I	47	49	42	42-49
SB	8	8	7	7-8	Cx I	69	68	67	67-69
AP	13	12	11	9-12	Leg I	620	589	582	609-644
AL	63	63	67	63-67	Ta II (L)	108	99	98	98-108
PL	62	65	65	62-65	Ta II (H)	21	22	23	21-23
ASE	59	70	53	53-70	Ti II	113	106	108	106-113
PSE	-	57	-	57	Ge II	83	80	81	80-83
L	87	85	93	85-93	Tf II	68	63	61	61-68
W	129	121	133	121-133	Bf II	60	58	59	58-60
ISD	56	58	63	56-63	Tr II	44	45	40	40-45
GL	237	232	231	231-237	Cx II	80	78	78	78-80
PDS	49	44	49	44-49	Leg II	556	529	525	548-577
DS	37	38	39	37-39	Ta III (L)	124	107	112	107-124
1a	33	37	36	33-36	Ta III (H)	19	20	17	17-20
2a	33	35	35	33-35	Ti III	162	152	154	152-162
3a	33	35	37	33-37	Ge III	93	88	86	86-93
1b	65	74	72	65-74	Tf III	77	77	75	75-77
2b	27	27	26	26-27	Bf III	67	76	69	67-76
3b	39	42	39	39-42	Tr III	48	49	44	44-49
PsFd	66	63	67	63-67	Cx III	75	79	74	74-79
PsGd	53	48	51	48-53	Leg III	646	628	614	631-665
pHy	43	41	40	40-43	AW / ISD	1.68	1.5	1.55	1.5-1.68
aHy	13	-	10	10-13	Ti III / AW	1.72	1.74	1.57	1.57-1.74
Ga	9	-	-	9	AW / AP	7.2	7.25	8.9	7.2-8.9
PaFe(L)	56	50	47	47-56	Ti III / TiI	1.22	1.21	1.21	1.21-1.22
PaFe(W)	43	42	42	42-43	Ti I / AW	1.4	1.44	1.3	1.3-1.44
PaGe(L)	67	62	60	60-67	AL / PL	1.02	0.96	1.03	0.96-1.03
PaGe(W)	20	22	22	20-22	PW / AW	1.22	1.21	1.19	1.19-1.22
Ta I (L)	123	112	113	112-123	AW / AL	1.5	1.38	1.46	1.38-1.5
Ta I (H)	24	29	27	24-29	L / W	0.67	0.7	0.7	0.67-0.7
					IP	1822	1746	1721	1721-1822

PL (62-65 vs. 50-58), ASE (53-70 vs. 40-46), L/W (9.67-0.70 vs. 0.79-0.85), AW/AL (1.38-1.50 vs. 1.71-2.11) and AW/AP (7.2-8.9 vs. 4.17-5.56), from *L. (L.) killingtoni* in the longer PW (105-117 vs. 86-103), W (121-133 vs. 96-114), GL (231-237 vs. 154-178), shorter SB (7-8 vs. 12-20), the longest dorsal setae (49 vs. 62), 1a (33-37 vs. 48-60), 2b (26-27 vs. 34-44), 3b (39-42 vs. 48-58) and Ti I (125-132 vs. 134-160); from *L. (L.) grossi* in fD (120 vs. 168), fV (38 vs. 49), the longer AW (87-98 vs. 73), PW (105-117 vs. 85), W (121-133 vs. 95), ISD (56-63

vs. 44), shorter AA (9-10 vs. 13), SB (7-8 vs. 15), 1a (33-37 vs. 56), 2a (33-35 vs. 47), L/W (0.67-0.70 vs. 0.91), AW/AP (7.20-8.90 vs. 4.87) and AW/ISD (1.50-1.68 vs. 1.16); from *L. (L.) clelandi* in dorsal setae barrow vs. dorsal setae broadened, the shorter AA (9-10 vs. 13-16), SB (7-8 vs. 14-16), AP (11-13 vs. 17-22), longer PL (62-65 vs. 47-54), W (121-133 vs. 112-115), Ta I (112-123 vs. 102-104), Ti I (125-132 vs. 110-114), Ti III (152-162 vs. 136-141), and L/W (0.67-0.70 vs. 0.80-0.88).

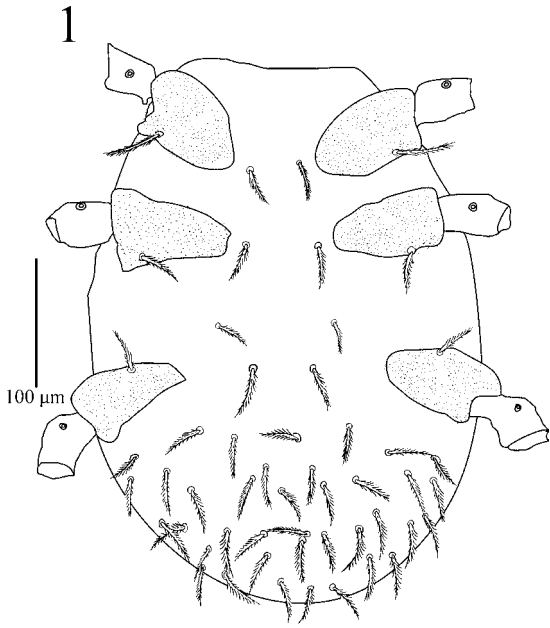


Fig. 1. *Leptus (Leptus) biljanae* Šundić & Haitlinger sp. n. (larva). Idiosoma, ventral view

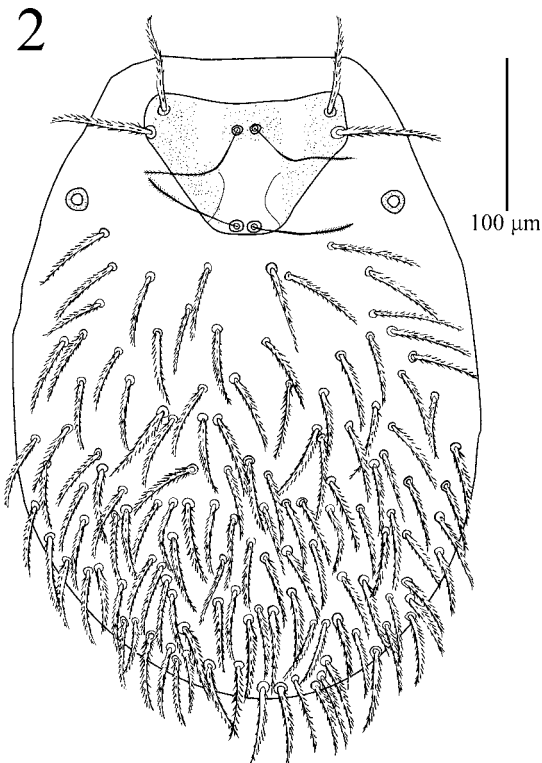


Fig. 2. *Leptus (Leptus) biljanae* Šundić & Haitlinger sp. n. (larva). Idiosoma, dorsal view

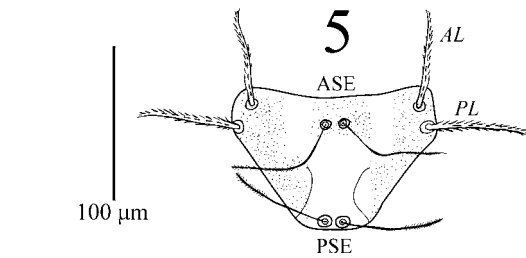
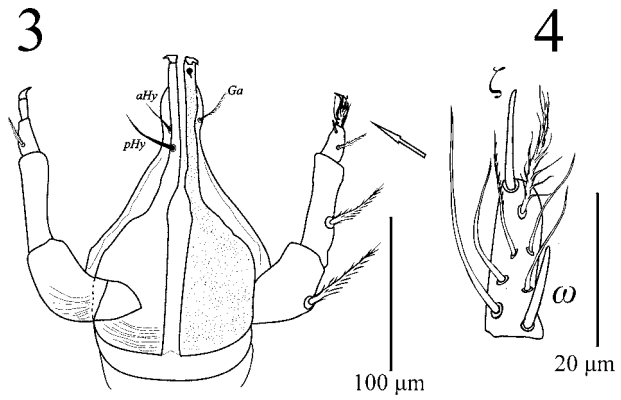


Fig. 3-5. *Leptus (Leptus) biljanae* Šundić & Haitlinger sp. n. (larva). 3, gnathosoma, right side dorsal view; left side ventral view; 4, palptarsus; 5, scutum

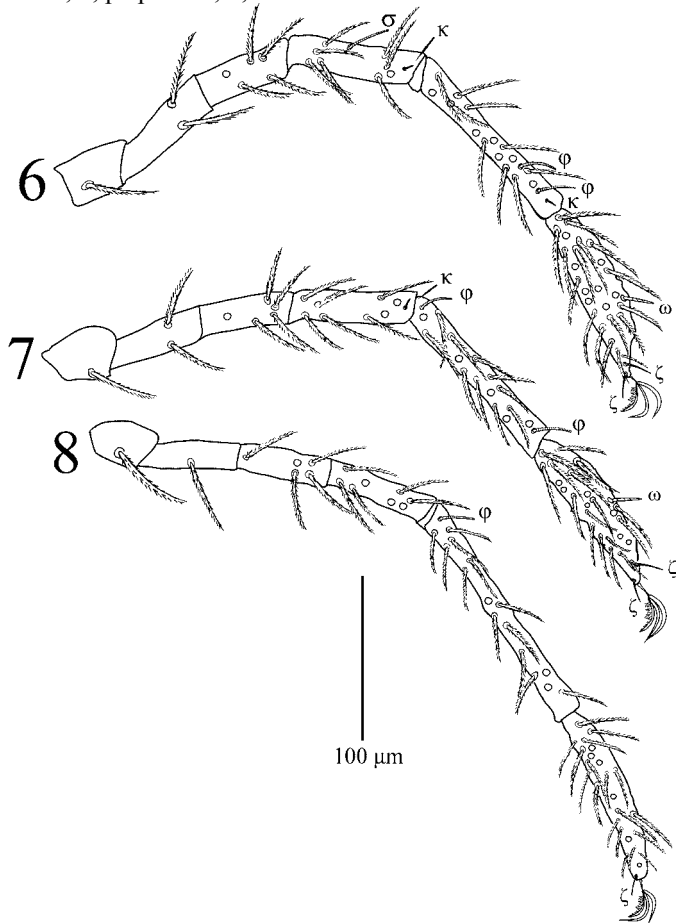


Fig. 6-8. *Leptus (Leptus) biljanae* Šundić & Haitlinger sp. n. (larva). 6, Leg I, trochanter-tarsus; 7, Leg II, trochanter-tarsus; 8, Leg III, trochanter-tarsus

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