

Charletonia elbasani, a new species from Albania (Acari: Erythraeidae), with notes on *C. kalithensis* Haitlinger, 2006

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(Received 24 August 2016; accepted 19 December 2016; published online 15 May 2017; edited by Michel BERTRAND)

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ABSTRACT — *Charletonia elbasani* n. sp. (Acari: Erythraeidae) is described and illustrated from larvae collected from herbaceous plants on the Elbasan (Albania). It is the eighteenth report of larval species of the genus *Charletonia* with two setae between coxae II and III. New and corrected data for *C. kalithensis* are given.

KEYWORDS — Acari; Parasitengona; *Charletonia*; new species; taxonomy; larva

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INTRODUCTION

The fauna of terrestrial Parasitengona (excluding chiggers) of Albania is poorly studied and only eight species of these mites have been reported from Albania up to now: *Abrolophus silesiacus* (Haitlinger, 1986) (= *A. kotorensis* Haitlinger, 2007), *Calyptostoma velutinum* (Müller, 1776), *Charletonia krendowskyi* (Feider, 1954) (Haitlinger & Šundić 2014), *Erythraeus* (E.) *regalis* (C. L. Koch, 1837), *Erythraeus* (Z.) *budapestensis* Fain & Ripka, 1998 (Haitlinger & Šundić 2015), *E.* (Z.) *albanicus* Haitlinger, 2012, *Leptus* (*Leptus*) *josifovi* Beron, 1975, (Beron 2008, Haitlinger 2012, Haitlinger & Šundić 2014, Haitlinger & Łupicki, 2015) and *Valgothrombium melindae* Haitlinger, 2008.

In this paper we describe the larvae of the new species *Charletonia elbasani*, collected in Albania, and new and corrected data for holotype of *C. kalithensis* are given.

MATERIAL AND METHODS

The specimens were collected by a sweep net on grasses and preserved in 75% ethanol. Mite specimens were cleared in Nesbitt's solution and mounted in Faure medium (Walter & Krantz, 2009). All measurements are given in micrometers (µm) and calculated using a Carl Zeiss Axioscope A1 microscope, and Carl Zeiss Axio Imager A2 with differential interference contrast and phase contrast. The terminology and abbreviations follow Haitlinger (1999, 2013).

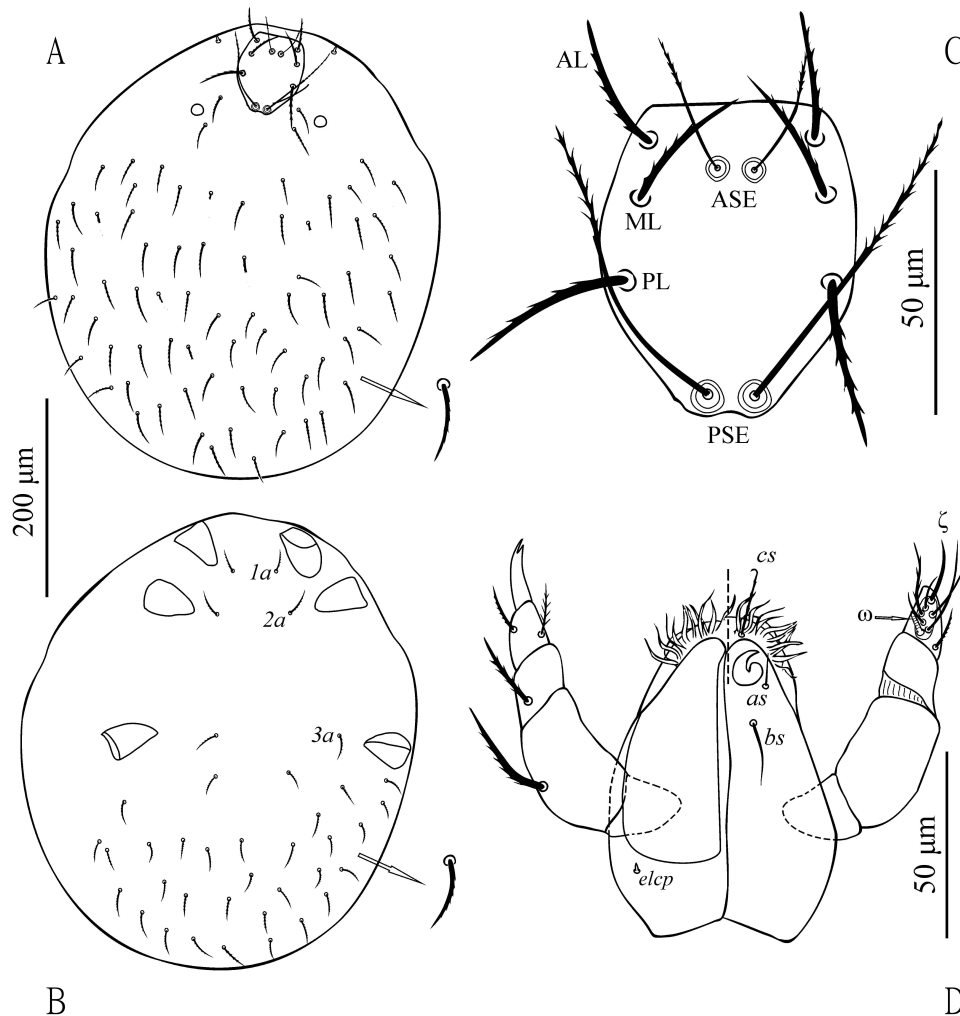


FIGURE 1: *Charletonia elbasani* n. sp. (larva). A – Idiosoma, dorsal view; B – Idiosoma, ventral view. C – Scutum; D – Gnathosoma.

Subfamily Callidosomatinae Southcott, 1957

Charletonia Oudemans, 1910

Charletonia elbasani n. sp. (Figures 1–2)

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Diagnosis (n=6) — Two setae between coxae II and III, solenidion on GeI placed distal to the normal setae, ω I long 24 – 28, Ti III 94 – 99, fnTi (16 – 17) – (15 – 16) – (15 – 16), gnathosoma with one pair of barbed galealae (cs), two pairs of nude hypostomae (as, bs).

Description (n=6) — larva.

Dorsal surface with 72 (64 – 76 in paratypes) slightly barbed and blunted setae (fD); one eye on each side of idiosoma, 11 in diameter (Figure 1A). Scutum pentagonal, punctate entirely and longer than wide. Anterior border almost straight, posterior border convex, except median part which is slightly concave (around Psens bases), lateral borders slightly convex. Scutum with two pairs of sensilla (ASE < PSE) both with short barbs in distal part, and three pairs of normal setae. Scutalae (AL, ML and PL) barbed and pointed, AL as long as ML

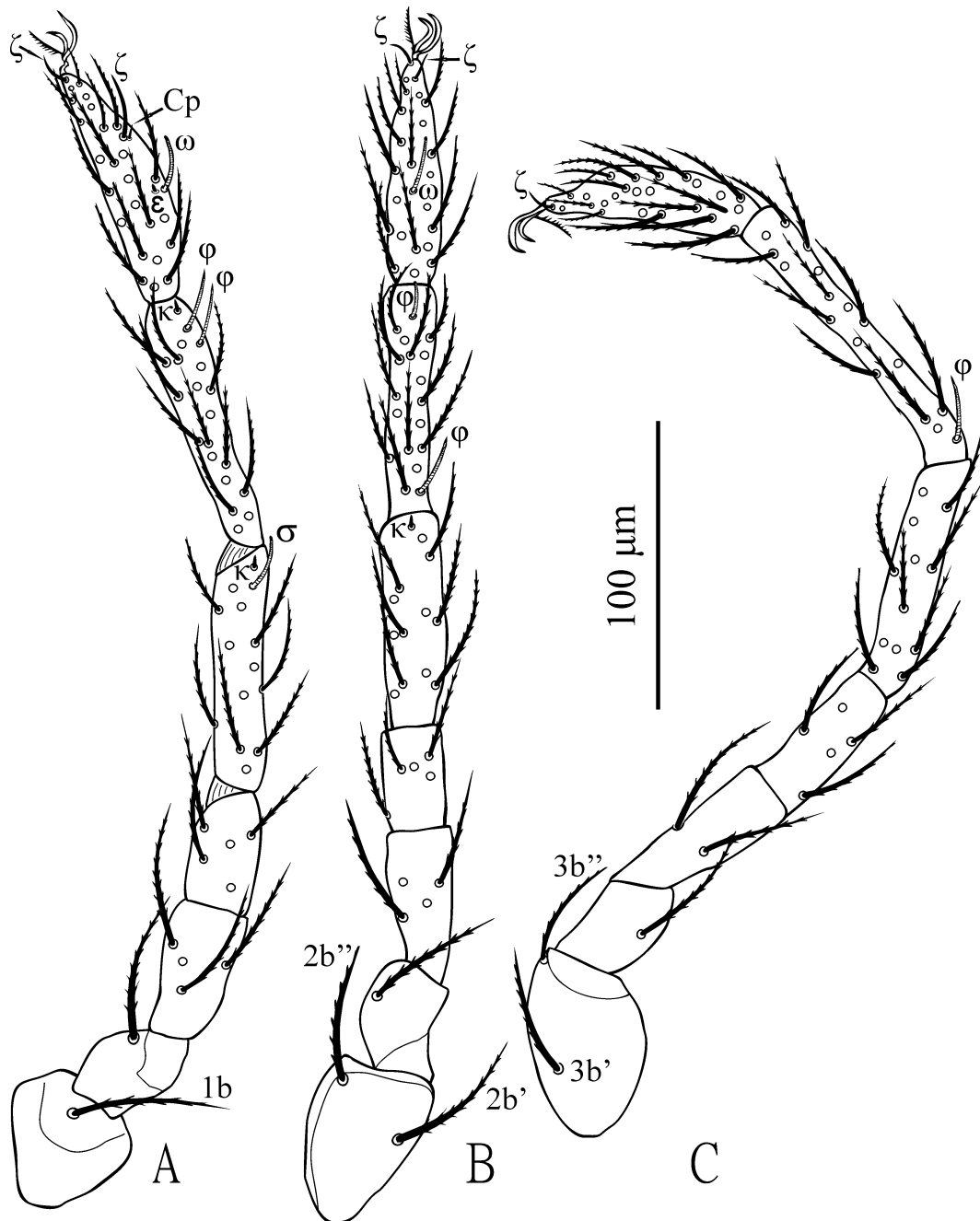


FIGURE 2: *Charletonia elbasani* n. sp. (larva). A – Leg I; B – Leg II; C – Leg III.

TABLE 1: *Charletonia elbasani* n. sp., larvae: metric data of holotype, (H) and paratypes (P).

Character	H	P	P	P	P	P	Range	Character	H	P	P	P	P	P	Range
IL	487	397	562	392	327	264	264-562	as	10	10	-	-	-	10	10
IW	400	247	440	325	234	190	190-440	bs	21	18	20	25	23	23	18-25
L	64	64	66	59	63	58	58-66	cs	23	19	17	24	21	25	17-25
W	56	58	57	56	57	56	56-58	ASE	32	33	33	30	34	32	30-34
AW	33	36	37	31	33	34	31-37	PSE	59	58	53	60	55	53	53-60
MW	40	36	43	37	38	40	37-40	AA	10	8	8	9	10	12	8-12
PW	49	49	49	46	50	49	46-50	SB	11	12	13	12	12	11	11-13
ISD	45	47	44	45	47	46	44-47	ω I	24	26	28	25	24	26	24-28
AP	33	30	34	30	34	28	30-34								
AL	33	33	-	34	34	34	33-34	Ta I	75	75	75	77	79	74	74-79
ML	32	33	33	33	35	32	32-35	Ti I	80	78	79	78	88	85	78-88
PL	38	40	39	39	38	38	38-40	Ge I	77	73	75	77	78	80	73-80
LX	4	5	4	4	5	5	4-5	Tf I	37	35	37	33	38	40	33-40
1a	33	34	38	33	32	41	32-41	Bf I	55	61	56	53	53	51	51-61
2a	37	37	34	36	37	43	34-43	Tr I	33	34	30	36	31	33	31-36
3a	32	33	28	32	31	38	28-38	Cx I	37	44	48	44	46	31	31-48
1b	52	50	54	49	51	48	48-54	Ta II	70	68	67	71	73	67	67-73
2b'	50	51	46	52	52	51	46-52	Ti II	69	66	71	69	75	73	66-75
2b''	44	40	42	45	47	44	40-47	Ge II	70	65	68	66	69	70	66-70
3b'	40	44	33	38	33	42	33-44	Tf II	32	32	34	32	35	34	32-35
3b''	35	38	30	36	35	36	30-38	Bf II	50	47	51	52	48	48	47-52
GL	85	80	85	81	88	85	80-88	Tr II	34	36	31	33	37	37	31-37
DS	31-44	30-44	28-48	30-46	30-44	27-42	27-48	Cx II	55	54	60	51	53	53	51-60
PsFd	48	48	50	48	44	50	44-50	Ta III	71	69	71	73	71	72	69-73
PsGd	27	28	24	23	25	25	23-28	Ti III	96	95	95	94	99	97	94-99
PaFe (L)	33	36	32	33	34	32	32-34	Ge III	78	75	80	80	82	85	75-85
PaFe (W)	20	19	27	23	22	23	19-23	Tf III	44	40	48	43	45	44	40-48
PaGe (L)	16	17	15	14	16	14	14-17	Bf III	52	50	59	52	53	51	50-59
PaGe (W)	15	16	17	15	17	16	15-17	Tr III	36	38	41	34	34	35	34-41
OD	20	18	19	19	18	20	18-20	Cx III	49	47	49	47	47	53	47-53

and both slightly shorter than PL (Figure 1C). Ventral side of idiosoma with sternalae 1a, 2a, 3a, all with short barbs, subequal in length. Thirty two weakly barbed setae behind coxae III (fv) (Figure 1B). Coxae I with one barbed seta (1b), coxae II and coxae III each with two barbed setae (2b', 2b'' and 3b', 3b''), which 2b'', 3b'' are blunted and 2b', 3b' are pointed (Figure 2).

NDV = 72 + 32 = 104, (62 – 76 + 28 – 32 = 90 – 108 in paratypes).

Leg segmentation formula: 7-7-7. Leg setal formula: Leg I: Ta-1ω, 1ε, 2ζ, 1Cp, 24n (21 – 24n in paratypes); Ti-2φ, 1κ, 17n (16 – 17 in paratypes); Ge-1σ, 1κ, 12n; TFe-5n, BFe-4n; Tr-1n, Cx-1n. Leg II: Ta-1ω, 2ζ, 22n (20 – 24n in paratypes); Ti-2φ, 16n (15-16n in paratypes); Ge-κ, 12n; TFe-5n, BFe-4n; Tr-1n; Cx-2n. Leg III: Ta-1ζ, 24n (21 – 24n in paratypes); Ti-1φ, 16n (15-16 in paratypes); Ge-12n; TFe-5n, BFe-2n; Tr-1n; Cx-2n (Figure 2). Measurements are given

in Table 1.

Gnathosoma with one pair of barbed galealae (cs), two pairs of nude hypostomalae (bs, as); bs>as. Palpfemur and palpgenu each with one barbed seta. Palptibia with three barbed and pointed setae (Figure 1D). Palptarsus with one eupathidium, one solenidion, four nude and one barbed seta. Odontus (OD) bifurcate (Figure 1D). fPp = 0-B-BBB-4NBωζ. Cheliceral basis and subcapitulum punctate. Supracoxal seta present, 5 long (Figure 1D).

Etymology — The name is derived from the name of the city Elbasan (in Albania), where the species was collected.

Type material — Holotype larva, from herbaceous plants in Elbasan (Albania), collected on 15 June 2016; five paratypes with the same data; leg. M. Šundić. The holotype and four paratypes are deposited in the Museum of Natural History, Wrocław University of Environmental and Life Sci-

TABLE 2: Metric data of the four *Charletonia* species.

Character	<i>C. elbasani</i>	<i>C. kalithensis</i>	<i>C. talebii</i>	<i>C. blascoi</i>	Character	<i>C. elbasani</i>	<i>C. kalithensis</i>	<i>C. talebii</i>	<i>C. blascoi</i>
	N=6	N=2	N=4	N=2		N=6	N=2	N=4	N=2
	(range)	(range)	(range)	(range)		(range)	(range)	(range)	(range)
IL	264-562	336-648	545-1060		as	10		6-8	8
IW	190-440	247-482	139-842		bs	18-25	22	8-9	13
L	58-66	72-76	85-99	84-87	cs	17-25	17		
W	56-58	64-70	75-80	68	ASE	30-34	34-40	19-25	36-37
AW	31-37	40-42	56-61	44	PSE	53-60	60-62	44-52	37-40
MW	37-40	44-50	61-69	56	AA	8-10	8	7-8	
PW	46-50	50-62	62-67	57	SB	12-13	16	12-13	
ISD	44-47	46-52	41-61	54	ω I	24-28	28		
AP	30-34	36	25-44	43-44	Ta I	74-79	84-90	45-60	63
AL	33-34	40-42	22-35	25-27	Ti I	78-88	96-106	75-84	56-57
ML	32-35	36-38	13-33	23	Ge I	73-80	86	44-56	53-54
PL	38-40	34-38	22-29	27	Tf I	33-40	48-54	25-36	
LX	4-5			18	Bf I	51-61	60-64	30-40	
1a	32-41	34-38	12-25	20-24	Tr I	31-36	38	28-34	
2a	34-43	48-50	20-29	27-29	Cx I	31-48	52	34-40	
3a	28-38	34-36	13-20		Ta II	67-73	74-76	71-76	62-63
1b	48-54	54-64	38-49	56-60	Ti II	66-75	86-90	56-65	50-54
2b'	46-52	54-60	33-40	40-52	Ge II	66-70	76-80	50-56	48-57
2b''	40-47	44-50	19-25	36-54	Tf II	32-35	42-46	29-35	
3b'	33-44	46-48	25-31	44-50	Bf II	47-52	52	38-45	
3b''	30-38	34-38	22-28	28-44	Tr II	31-37	36-40	29-36	
GL	80-88	94-98	99-111		Cx II	51-60	60-62	38-50	
DS	27-48	30-50	26-46	23-36	Ta III	69-73	78-80	76-87	63-64
PsFd	44-50	53-57			Ti III	94-99	114-120	72-96	78-81
PsGd	23-28	25-30			Ge III	75-85	92-94	60-70	57
PaFe (L)	32-34	32-34	28-39	48-58	Tf III	40-48	52-58	33-44	
PaFe (W)	19-23	37-38			Bf III	50-59	60-62	40-44	
PaGe (L)	14-17	19-20	13-22	30-32	Tr III	34-41	38-40	38-39	
PaGe (W)	15-17	24-25			Cx III	47-53	52-54	45-50	
OD	18-20	16-18							

ences, Wrocław, Poland, one paratype is deposited in Invertebrate collection, Biology Center of the Upper Austrian Museum, Linz, Austria.

Remarks — This species belongs to the larval species of the genus *Charletonia* with two setae between coxae II and III. Eighteen species with such character are known hitherto (Haitlinger & Šundić, 2016). Moreover, *Charletonia elbasani* n. sp. belongs to the species group with solenidion on GeI placed distal to the normal setae and Ti III < 120. This group includes: *C. kalithensis* Haitlinger, 2006; *C. talebii* Sedghi, Saboori, Hakimitabar, 2010 and *C. blascoi*

Southcott, 1993 (Southcott, 1993, Haitlinger, 2006, Sedghi *et al.*, 2010).

Charletonia elbasani n. sp. differs from *C. kalithensis* by the shorter L (58 – 66 *vs.* 72 – 76), W (56 – 58 *vs.* 64 – 70), AL (33 – 34 *vs.* 40 – 42), TiI (78 – 88 *vs.* 96 – 106), TiII (78 – 88 *vs.* 98 – 106), TiIII (66 – 75 *vs.* 86 – 90), TiIII (94 – 99 *vs.* 114 – 120), PaFe (W) (19 – 23 *vs.* 38), PaGe (W) (15 – 17 *vs.* 34), number of normal setae on BFe III (2 *vs.* 3), presence of κ GeII (*vs.* absent in *C. kalithensis*), the number of NDV (90 – 108 *vs.* $\approx$ 124), from *C. talebii* in shorter L (58 – 66 *vs.* 85 – 99), W (56 – 58 *vs.* 75 – 80), in longer 1a (32

TABLE 3: Chaetotaxy (body and leg segments) of the four *Charlestonia* species.

Character	<i>C. elbasani</i> sp.nov.	<i>C. kalithensis</i>	<i>C. talebii</i>	<i>C. blascoi</i>	Character	<i>C. elbasani</i> sp.nov.	<i>C. kalithensis</i>	<i>C. talebii</i>	<i>C. blascoi</i>
	N=6	N=2	N=4	N=2		N=6	N=2	N=4	N=2
	(range)	(range)	(range)	(range)		(range)	(range)	(range)	(range)
Cx I	1	1	1	1	ζTa I	2	2	2	2
Cx II	2	2	2	2	ζTa II	2	2	1	-
Cx III	2	2	2	2	ζTa III	1	0	1	-
Tr I	1	1	1	1	CpφTi I	1	0	1	1
Tr II	1	1	1	1	CpζTa I	1	0	1	1
Tr III	1	1	1	1	CpζTa II	0	0	0	0
BFe I	4	4	4	4	εTa I	0	0	1	1
BFe II	4	4	4	4	εTa II	0	0	0	0
BFe III	2	3	2	2	κGe I	1	1	1	1
TFe I	5	5	5	5	κGe II	1	0	1	1
TFe II	5	5	5	5	κGe III	0	1	1	0
TFe III	5	5	5	5	κTi I	1	0	0	1
Ge I	12	12	8	8	κTi II	0	1	0	0
Ge II	12	12	8	8	σGe I	1	0	0	1
Ge III	12	12	8	8	σGe II	0	0	0	1
Ti I	16-17	16	12	12	σGe III	0	2	2	0
Ti II	15-16	16	13	13	φTi I	2	2	2	2
Ti III	15-16	16	13	12	φTi II	2	1	1	2
Ta I	21-24	26	22	21	φTi III	1	1	1	1
Ta II	20-24	24	22	26	ωTa I	1	1	1	1
Ta III	21-24	23	22	21	ωTa II	1	0	0	1

– 41 *vs.* 12 – 25), 2a (34 – 43 *vs.* 20 – 29), *bs* (18-25 *vs.* 8-9), TaI (74 – 79 *vs.* 45 – 60), GeI (73 – 80 *vs.* 44 – 56), number of normal setae on GeI–III (12-12-12 *vs.* 8-8-8), the number of NDV (90 – 108 *vs.* 46) and from *C. blascoi* in shorter L (58 – 66 *vs.* 84 – 87), MW (37 – 40 *vs.* 56), AP (30 – 34 *vs.* 43 – 44), in longer AW (31 – 37 *vs.* 56 – 61), MW (37 – 40 *vs.* 61 – 69), PL (38 – 40 *vs.* 22 – 29), 2a (34 – 43 *vs.* 20 – 29), PSE (60 – 62 *vs.* 37 – 40), TiI (78 – 88 *vs.* 56 – 57), GeI (73 – 80 *vs.* 53 – 54), TiIII (94 – 99 *vs.* 78 – 81), number of normal setae on Ge I–III (12-12-12 *vs.* 8-8-8), Ti I–III (16(17)-15(16)- 15(16) *vs.* 12-13-12), absent of σ on GeII (*vs.* presence in *C. blascoi*). All metric and meristic data for these species are given in Tables 2, 3.

Charletonia kalithensis Haitlinger, 2006

The following new metric data (holotype) are added: PsFd 57, PsGd 30, PaFe (34), PaFe (W) 38,

PaGe (L) 20, PaGe (W) 34, *cs* 17, OD 23; corrected fnBf 4-4-2.

Paratype: PsFd 53, PsGd 25, PaFe (L) 32, PaFe (W) 37, PaGe (L) 19, PaGe (W) 24, OD 18, *bs* 28, 3a 34.

REFERENCES

- Beron P. 2008 — Acarorum Catalogus I, Acariformes: Calyptostomatoidea (Calyptostomatidae), Erythraeoidea (Smarididae, Erythraeidae) — Edition of Pensoft Publishers and the National Museum of Natural History, Sofia, Bulg.— Acad. Sci., Sofia-Moscow. 271 pp.
- Haitlinger R. 1999 — Six new species of Leptus Latreille, 1796 (Acari, Prostigmata, Erythraeidae) from South-East Asia. — *Miscel. Zool.* 22: 51–68.
- Haitlinger R. 2006 — New records of mites (Acari: Prostigmata: Erythraeidae, Trombidiidae) from Samos, Greece, with descriptions of six new species. — *Syst. Appl. Acarol.*, 11: 107–123.
[doi:10.11158/saa.11.1.12](https://doi.org/10.11158/saa.11.1.12)

- Haitlinger R. 2012 — New records of mites (Acari: Prostigmata: Erythraeidae, Trombidiidae) from Albania, Macedonia, Montenegro and Serbia, with a description of *Erythraeus* (*Erythraeus*) *albanicus* sp. nov. — Syst. Appl. Acarol., 17: 339–345. doi:10.11158/saa.17.3.12
- Haitlinger R. 2013 — First record of *Leptus* (*Leptus*) *holgeri* (Acari: Prostigmata: Erythraeidae) from Vietnam, with redescription of the species. — Persian J. Acarol., 2: 341–351.
- Haitlinger R., Łupicki D. — 2015 A redescription of *Abrolophus silesiacus* (HAITLINGER, 1986) with notes on some other *Abrolophus* species (Acari, Prostigmata, Erythraeidae). — Linzer biol. Beitr., 47: 569–581.
- Haitlinger, R., Saboori, A. — 2007 Two new larval ectoparasitic *Charletonia* Oudemans (Acari: Prostigmata: Erythraeidae) found on Orthoptera (Insecta), and the first record of *Charletonia krendowskyi* (Feider) in Iran. — Pol. J. Entomol., 76: 61–71.
- Haitlinger R., Šundić A. 2014 — New records of mites (Acari: Prostigmata: Erythraeidae, Microtrombidiidae, Trombidiidae) from Albania and Montenegro, with redescription of *Abrolophus kazimierae* (Haitlinger, 1986). — Acta zool. bulg., 66 (4), 2014: 35–42.
- Haitlinger R., Šundić A. 2015 — New records of mites (Acari: Parasitengona: Erythraeidae, Microtrombidiidae, Trombidiidae) from Albania, Montenegro and Serbia, with notes on *Erythraeus* (*Zaracarus*) *budapestensis* — Linzer biol. Beitr. 47/1, 2015: 583–590. — Acarologia, 34: 51–56.
- Haitlinger R., Šundić A. 2016 — *Charletonia kosensis*, a new species from Kos, Greece, with notes on *C. austisensis* Haitlinger, 2007 (Acari: Erythraeidae) — Syst. Appl. Acarol., 21(8): 1009–1016. doi:10.11158/saa.21.8.2
- Southcott, R.V. 1993 — A new larval *Charletonia* (Acarina: Erythraeidae) from Spain. — Acarologia, 34: 51–56.
- Sedghi, A., Saboori, A., Hakimitabar, M., Akrami, M.A. 2010 — *Charletonia talebii* n. sp. from Iran (Acari: Prostigmata: Erythraeidae). — Acarologia, 59: 335–341. doi:10.1051/acarologia/20101976
- Walter D.E., Krantz G.W. 2009 — Collecting, rearing, and preparing specimens. In: Krantz, G. W. and Walter, D. E. (eds), A Manual of Acarology, 3rd edition — Texas Tech University Press, pp. 83–96.

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