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## **CHARLETONIA STEKOLNIKOVI SP. N. (ACARI, ERYTHRAEIDAE) FROM IRAN**

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*Charletonia stekolnikovi* sp. n. (Acari, Erythraeidae) from Iran. Hakimitabar M., Saboori A. — *Charletonia stekolnikovi* sp. n. (Acari, Erythraeidae) is described and illustrated from herbaceous plants (off host) from Taleghan city, Tehran province, Iran.

Key words: Prostigmata, Callidosomatinae, Charletonia, new species, Taleghan city, Iran.

*Charletonia stekolnikovi* sp. n. (Acari, Erythraeidae) из Ирана. Хакимитабар М., Сабури А. — *Charletonia stekolnikovi* sp. n. (Acari, Erythraeidae) описана и проиллюстрирована с травянистых растений из города Талехан, провинции Тегерана, Иран.

Ключевые слова: Prostigmata, Callidosomatinae, Charletonia, новый вид, Талехан, Иран.

### **Introduction**

The genus *Charletonia* erected by Oudemans, 1910 is known only from larvae and distributed worldwide. Heretofore 67 species of the genus *Charletonia* with four setae between coxae II and III have been described throughout the world (Beron, 2008).

Only nine species of larval *Charletonia* have been reported from Iran hitherto. Among them, four species have four setae between coxae II and III. It shows that mites of the genus *Charletonia* are poorly studied in Iran (Haitlinger, Saboori, 2007, 2008).

In this paper, we describe the larva of *Charletonia stekolnikovi* sp. n. from herbaceous plants (off host) from Navizak village, Taleghan city, Tehran province, Iran.

### **Material and methods**

Two larvae were collected from herbaceous plants. They were sampled by an entomological net and preserved in 75% ethanol, cleared in lactophenol solution and mounted on microscopic slides using Faure medium on a glass slide. Measurements (given in micrometers) made using BX51 phase contrast Olympus microscope. Figures were drawn using the same microscope equipped with drawing tube and magnification changer.

The terminology and abbreviations are followed from Saboori et al. (2009).

The holotype and paratype are deposited in the Acarological Collection, Jalal Afshar Zoological Museum, College of Agriculture, University of Tehran, Karaj, Iran.

### ***Charletonia stekolnikovi* sp. n. (fig. 1)**

**Diagnosis.** Larva with the following features: Four setae between coxae II and III, gnathosoma with 2 hypostomalae, anterior hypostomala (aHy) nude and posterior (pHy) one barbed,  $fnTi = 18-20-19$ ;  $Ti III < 200$ , solenidion on Ge I distal to most distal normal seta. Cp present on Ti.

### **Description**

**Material.** The holotype (ARS-20100816-1a) larva and one paratype larva (ARS-20100816-1b) were collected on 20 September 2007, by M. Hakimitabar from herbaceous plants, in Taleghan city (36°11.925' N, 50°51.866' E, 2114 m a. s. l.), Tehran Province, Iran.

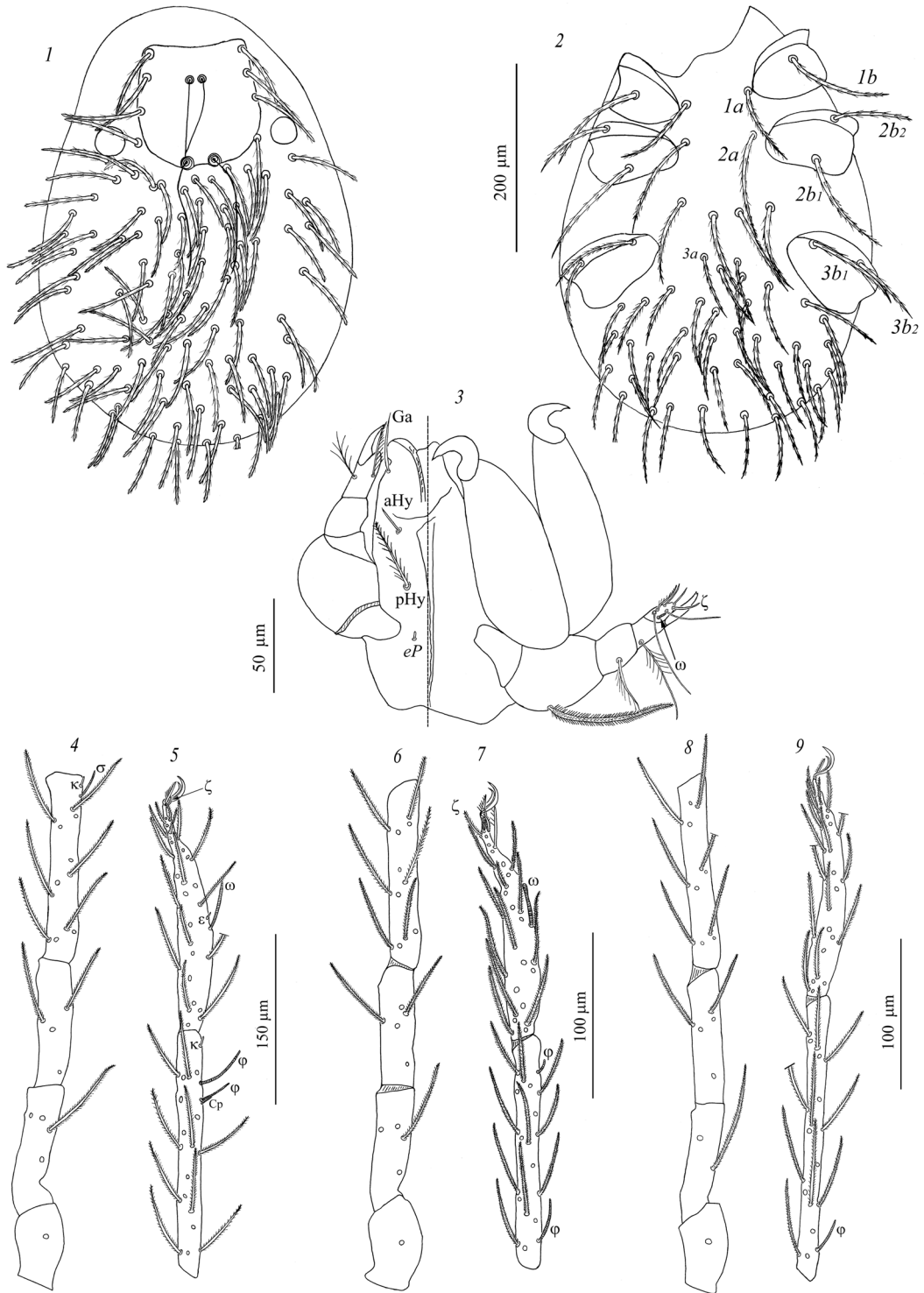


Fig. 1. *Charletonia stekolnikovi* (larva): 1 — dorsal view of idiosoma; 2 — ventral view of idiosoma; 3 — ventral view (left) and dorsal view of gnathosoma (right); 4 — Leg I, Tr — Ge; 5 — Leg I, Ti — Ta; 6 — Leg II, Tr — Ge; 7 — Leg II, Ti — Ta; 8 — Leg III, Tr — Ge; 9 — Leg III, Ti — Ta.

Рис 1. *Charletonia stekolnikovi* (личинка): 1 — идиозосома с дорсальной стороны; 2 — идиозосома с вентральной с дорсальной стороны; 3 — гнатосома с вентральной стороны (слева) и дорсальной стороны (справа); 4 — нога I, Tr — Ge; 5 — нога I, Ti — Ta; 6 — нога II, Tr — Ge; 7 — нога II, Ti — Ta; 8 — нога III, Tr — Ge; 9 — нога III, Ti — Ta.

Table 1. Metric data of *Charletonia stekolnikovi* sp. n. larvae

Таблица 1. Метрические данные по личинке вида *Charletonia stekolnikovi* sp. n.

Character	holotype	paratype	Character	holotype	paratype
IL	322	252	pHy	40	41
IW	223	173	Ta I (L)	119	121
AW	64	62	Ta I (H)	20	20
MW	72	67	Ti I	136	134
PW	83	79	Ge I	109	109
AA	10	11	TFe I	55	55
SB	17	16	BFe I	69	69
AP	44	37	Tr I	50	55
AL	50	48	Cx I	51	58
ML	52	55	Leg I	589	601
PL	54	55	Ta II (L)	124	—
AAS	39	35	Ta II (H)	18	—
AM	50	54	Ti II	129	—
S	80	80	Ge II	99	—
L	87	85	TFe II	62	62
W	91	90	BFe II	66	67
ISD	55	52	Tr II	47	49
GL	151	149	Cx II	62	62
DS	45–50	43–50	Leg II	589	—
<i>1a</i>	52	51	Ta III (L)	138	—
<i>2a</i>	68	64	Ta III (H)	17	—
<i>1b</i>	79	77	Ti III	176	—
2b1	74	69	Ge III	119	—
2b2	50	54	TFe III	82	—
3b1	52	55	BFe III	71	—
3b2	45	47	Tr III	54	55
PaScFed	69	69	Cx III	65	62
PaScGed	32	30	Leg III	705	—
aHy	13	13	IP	1883	—

Holotype larva. Dorsal surface with 88 (fD) barbed and pointed setae; one eye on each side of idiosoma, 18 in diameter; scutum pentagonal, punctate and longer than wide; lateral parts of anterior border slightly concave whereas median part slightly convex, lateral borders slightly convex; posterior border convex except near S bases which is slightly concave; scutum with two pairs of sensilla and three pairs of normal setae. AL, ML and PL barbed and pointed, AL slightly shorter than ML and PL. Anterior sensilla (AM) shorter than posterior sensilla (S), AM and S smooth (fig. 1, 1).

Ventral surface of idiosoma with 40 (fV) pointed setae with fine barbs. Sternalae *1a* (between coxae I), *2a* (between coxae II) and *3a* (between coxae III) barbed, tapering and pointed; four setae between coxae II and III, similar sternalae, laterals long 53, medials 57. NDV = 88 + 40 = 128. Coxa I with one barbed seta (*1b*); coxae II and III each with two barbed setae. All coxalae pointed (fig. 1, 2). Supracoxal seta of leg I peg like, 4 long.

Leg segmentation formula: 7–7–7. Leg setal formula: Leg I: Ta–1w, 1e, 1z, 30n; Ti–2φ, 1k, 1Cp, 18n; Ge–1s, 1k, 12n; TFe–4n (it seems an abnormality, there are 5 setae on TFe I in paratype); BFe–4n; Tr–1n (fig. 1, 4, 5). Leg II: Ta–1w, 1z, 29n; Ti–2φ, 20n; Ge–12n; TFe–5n; BFe–4n; Tr–1n (fig. 1, 6, 7). Leg III: Ta–25n; Ti–1φ, 19n; Ge–12n; TFe–5n; BFe–2n; Tr–1n (fig. 1, 8, 9). Dorsal surface of legs punctate whereas ventral surface is sparsely punctate.

IP = 589 + 589 + 705 = 1883 holotype.

Subcapitulum with a nude galeala (Ga) and two hypostomalae, anterior (aHy) nude and posterior (pHy) barbed. Galeala longer than anterior hypostomala and short-

Table 2. Differences of setae on leg segments and idiosoma of *C. stekolnikovi* sp. n. and 22 other species listed in remarks.  
 Таблица 2. Различия в щетинках на ножных сегментах у *C. stekolnikovi* sp. n. и 22 других видов, указанных в примечании.

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
TFe I	5	5	5	5	5	5	5	—	5	5	5	—	—	—	5	5	5	5	5	5	5	4–5	
TFe III	5	5	5	5	5	5	5	—	5	5	5	—	—	—	5	5	5	5	5	5	5	4	5
Ge I	12	13	12	12	12	12	12	—	12	10	11	—	—	—	12	12	12	12	12	12	12	12	12
Ti I	18	18	15	18	15	16	17	—	16	12	18	—	—	—	17	18	18	18	18	18	18	18	18
Ti II	18	19	19	19	20	19	18	—	18	10	19	—	—	—	18	19	18	19	19	19	18	17	20
Ti III	18	18	19	18	21	18	18	—	19	16	19	—	—	—	19	19	19	19	17	18	18	18	19
Ta I	28	28	29	22	27	28	23	—	26	31	26	—	—	—	24	27	27	29	24	30	21	30	30
Ta II	24	27	28	22	24	27	22	—	26	29	30	—	—	—	27	28	27	28	28	26	22	29	29
Ta III	23	28	27	22	25	30	19	—	27	25	27	—	—	—	25	27	25	28	26	30	23	25	25
Sp Ta I	—	1	—	—	1	0	0	—	1	—	1	—	—	—	0	—	—	—	1	1	—	0	0
Ta I	—	2	2	2	2	1	—	1	2	—	2	—	—	—	—	—	—	—	—	1	1	1	1
Ta III	—	1	1	1	1	1	—	—	0	—	—	—	—	—	—	—	—	—	—	—	0	0	0
Ta I	—	1	—	0	1	1	—	—	1	0	1	—	—	—	—	1	0	1	1	—	—	—	1
kGe II	1	1	1	1	1	1	1	—	1	1	1	—	—	—	1	1	0	1	1	1	1	1	0
kTi I	0	1	1	1	1	1	1	—	1	1	1	—	—	—	1	1	1	1	1	1	1	1	1
kTi II	1	0	0	0	0	0	0	—	0	0	0	—	—	—	1	0	0	0	0	0	0	0	0
fD	73	89	58	102	79	75–78	54–60	130	67	127	54	—	—	—	—	97	66	98	91	65	56	88	88
fV	38	38	19	44	44	29–38	22–32	—	39	—	22	—	—	—	—	—	—	—	—	—	23	40	40

Note. 1. *C. humanensis*, 2. *C. cardinalis*, 3. *C. keyi*, 4. *C. rocciai*, 5. *C. lankensis*, 6. *C. southcotti*, 7. *C. miyazakii*, 8. *C. humensis*, 9. *C. striticeps*, 10. *C. shiroyama*, 11. *C. wrighti*, 12. *C. taitanae*, 13. *C. alarobiaensis*, 14. *C. agatae*, 15. *C. aranea*, 16. *C. banksi*, 17. *C. buforania*, 18. *C. paolii*, 19. *C. perthensis*, 20. *C. womersleyi* and 21. *C. bojnordensis*, 22. *C. stekolnikovi* sp. n.

Примечание. 1. *C. humanensis*, 2. *C. cardinalis*, 3. *C. keyi*, 4. *C. rocciai*, 5. *C. lankensis*, 6. *C. southcotti*, 7. *C. miyazakii*, 8. *C. humensis*, 9. *C. striticeps*, 10. *C. shiroyama*, 11. *C. wrighti*, 12. *C. taitanae*, 13. *C. alarobiaensis*, 14. *C. agatae*, 15. *C. aranea*, 16. *C. banksi*, 17. *C. buforania*, 18. *C. paolii*, 19. *C. perthensis*, 20. *C. womersleyi* and 21. *C. bojnordensis*, 22. *C. stekolnikovi* sp. n.

Table 3. Differences of metric data of *C. stekolnikovi* sp. n and 22 other species listed in remarks.  
 Table 3. Различия в метрических данных у *C. stekolnikovi* sp. n и 22 других видов, указанных в примечании.

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
AW	72	*	74	78	*	—	—	*	73-96	75-83	*	*	82-90	78-92	62-72	77-83	66-72	78	73	*	74	62-64
MW	80	70-92	85	80-82	*	—	—	*	81-101	46-54	*	78	70-86	74-82	66-84	90-96	*	83	83	82	78	67-72
PW	101	90-117	94	102-105	*	—	—	92	82-104	83-94	96	102	100-118	100-110	79-94	101-108	*	91	91	99	100	79-83
AP	*	*	—	*	*	—	—	28	*	23-24	24	*	*	*	41-49	43-49	26-31	*	22-25	*	*	37-44
AL	72	*	54	*	*	64	*	36	*	35-36	*	56	*	*	53-60	34-38	59-64	33-35	*	*	*	48-50
PL	65	58-72	46	*	*	*	57	78	29-38	33-36	*	78	*	*	38-52	32-42	36-43	32-35	*	*	40	54-55
AAS	*	—	—	18	—	—	—	—	*	*	*	18	—	20-22	16-20	20-24	10-14	18	11	16	—	35-39
AM	*	52-68	38	~32	49	61	47	68	45-70	34-36	*	44	34-44	40-52	38-46	*	58-66	*	*	58	30	50-54
S	*	52-66	71	65	68	*	67	*	63-91	62-65	*	66	62-74	*	*	90-95	*	*	*	64	70	80
L	103	100-121	*	*	*	104	76	*	89-109	65-78	95	112	94-106	92-102	*	90-97	88-95	*	66-79	99	—	85-87
W	106	100-123	102	107-109	*	113	101	98	*	*	104	110	108-124	108-120	*	108-117	*	98	102	107	—	90-91
ISD	70	70-80	—	58-59	*	—	—	66	*	38-42	64	80	56-64	*	57-68	60-66	*	59	*	66	—	52-55
ML	—	—	—	—	—	—	—	—	—	—	*	80	*	*	*	*	34-42	*	28-35	*	—	52-55
DS	*	53-70	*	~55-57	*	*	*	131	31-40	24-46	50-73	—	70-92	*	*	*	28-35	*	*	*	28-34	43-50
<i>Ia</i>	—	—	—	—	—	—	—	—	—	—	*	32	30-48	30-42	32	39	40	*	32	26	30	51-52
<i>2a</i>	—	—	—	—	—	—	—	—	—	—	—	—	*	*	41	56	43	*	36	—	36	64-68
<i>Ib</i>	—	—	—	—	—	—	—	—	—	—	60	52	36-44	38-48	62	*	65	*	55	—	60	77-79
<i>2b*</i>	—	—	—	—	—	—	—	—	—	—	43	*	*	42-52	54	60	47	*	48	—	44	69-74
<i>2b**</i>	—	—	—	—	—	—	—	—	—	—	65	30	*	34-42	*	41	*	*	*	—	*	50-54
<i>3b*</i>	—	—	—	—	—	—	—	—	—	—	45	*	42-50	38-40	45	*	47	68	45	—	36	52-55
<i>3b**</i>	—	—	—	—	—	—	—	—	—	—	59	*	*	34-40	40	41	37	*	38	—	32	45-47

\* Very close or no differences observed.  
 Note. Обозначения, как в табл. 2.  
 \* Очень близкие или нет различий.  
 Примечание. Обозначения, как в табл. 2.

Table 3.  
Окончание табл. 3

Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
GL	72	56-70	32	43-47	—	59	44	60	33-44	25-30	—	—	—	—	115	—	—	—	—	—	—	149-151
Ta I (L)	156	*	*	135-145	—	—	—	84	*	87-10 <sup>2</sup>	*	80	*	86-112	108	146	128	137	97	—	*	119-121
Ti I	166	*	118	124-127	—	—	—	106	*	73-82	144	70	86-104	86-110	102-119	168	155	157	84	110	114	134-136
Ge I	125	*	93	*	—	—	—	96	*	58-82	115	68	80-92	78-96	85	129	125	128	77	89	98	109
TFe I	—	70-84	—	*	—	—	—	*	—	—	—	50	*	*	—	—	—	—	—	—	62	55
BFe I	—	70-88	—	*	—	—	—	64	—	—	—	48	*	*	—	—	—	—	—	—	74	69
Tr I	—	*	—	*	—	—	—	*	—	—	—	*	*	*	—	—	—	—	—	—	44	50-55
Cx I	90	*	—	*	—	—	—	*	—	—	—	*	*	*	—	—	—	—	—	—	*	51-58
Ta II (L)	146	*	—	*	—	—	—	92	—	87-95	113	76	94-114	94-102	—	—	—	—	—	—	110	124
Ti II	146	*	107	104-122	—	—	—	112	—	68-75	*	64	80-96	76-92	—	—	—	—	—	—	94	129
Ge II	114	*	86	93	—	—	—	100	—	54-73	108	60	76-90	70-82	—	—	—	—	—	—	84	99
TFe II	—	*	—	56-58	—	—	—	52	—	—	—	30	34-54	40-48	—	—	—	—	—	—	52	62
BFe II	—	*	—	61-62	—	—	—	*	—	—	—	40	52-64	50-60	—	—	—	—	—	—	56	66-67
Tr II	—	*	—	*	—	—	—	*	—	—	—	*	*	*	—	—	—	—	—	—	*	47-49
Cx II	—	75-84	—	68-74	—	—	—	68	—	—	—	80	64-78	60-72	—	—	—	—	—	—	66	62
Ta III (L)	156	110-132	123	140-152	—	—	—	110	*	96-103	124	74	112-124	104-114	108	142	128	*	95	104	124	138
Ti III	208	*	147	168-170	—	—	—	168	*	98-111	194	82	124-140	106-132	133	209	192	201	100	140	146	176
Ge III	125	*	95	106-108	—	—	—	108	102-138	72-77	126	72	86-96	70-92	95	125	121	127	77	94	94	119
TFe III	—	*	—	56-58	—	—	—	76	—	—	—	40	54-68	48-60	—	—	—	—	—	—	66	82
BFe III	—	79-92	—	*	—	—	—	80	—	—	—	52	52-66	52-60	—	—	—	—	—	—	*	71
Tr III	—	53-68	—	*	—	—	—	60	—	—	—	50	*	*	—	—	—	—	—	—	44	54-55
Cx III	—	70-79	—	78-81	—	—	—	*	—	—	—	72	*	*	—	—	—	—	—	—	*	62-65

er than posterior ones. Palpal femur and genu each with one barbed and pointed seta; palpal tibia with three barbed and pointed setae; palpal tibial claw bifid. Palp tarsus with one barbed and 4 nude setae, a solenidion and an eupathidium (fig. 1, 3). fPp = 0-B-B-BBB<sub>2</sub>-BNNNNωζ. Cheliceral basis and subcapitulum punctate. Cheliceral blade with a terminal and a subterminal tooth. Supracoxal seta peg like, 4 long

Measurements are given in table 1.

**Etymology.** The species is named in honour of Dr. Alexandr Stekolnikov (Zoological Institute, Russian Academy of Sciences, Universitetskaya quay 1, St. Petersburg 199034, Russia) for his great contribution to the taxonomy of chigger mites.

**Remarks.** This species belongs to the species group of *Charletonia* with four setae between coxae II–III, two hypostomata, solenidion of Ge I distal to normal setae and Ti III < 200 μm. This group includes 21 species: 1 — *C. hunanensis*, 2 — *C. cardinalis*, 3 — *C. keyi*, 4 — *C. rocciai*, 5 — *C. lankensis*, 6 — *C. southcotti*, 7 — *C. miyazakii*, 8 — *C. hunensis*, 9 — *C. striaticeps*, 10 — *C. shiroyama*, 11 — *C. wrighti*, 12 — *C. tatianae*, 13 — *C. alarobiaensis*, 14 — *C. agatae*, 15 — *C. aranea*, 16 — *C. banksi*, 17 — *C. buforania*, 18 — *C. paolii*, 19 — *C. perthensis*, 20 — *C. womersleyi*, 21 — *C. bojnordensis*. This species is very similar to *C. hunanensis*, *C. buforania* and *C. paolii*.

It differs from *C. hunanensis* by number of normal setae on TFe I (5 vs. 4–5), Ti II (20 vs. 18), Ti III (19 vs. 18), fn Ta (30–29–25 vs. 28–24–23), absence k on Ge II and Ti II (vs. presence), presence k on Ti I (vs. absence), fD (73 vs. 88), presence on Ti III (vs. absence) and shorter Ta I (119–121 vs. 156), Ti I (134–136 vs. 166), Ge I (109 vs. 125), Cx I (51–58 vs. 90), Ta II (124 vs. 146), Ti II (129 vs. 146), Ge II (99 vs. 114), Ta III (138 vs. 156), Ti III (176 vs. 208), Ge III (119 vs. 125), AW (62–64 vs. 72), MW (67–72 vs. 80), PW (79–83 vs. 101), AL (48–50 vs. 72), L (85–87 vs. 103), W (90–91 vs. 106), longer GL (149–151 vs. 72); from *C. buforania* by number of normal setae on Ti II (20 vs. 18), fD (66 vs. 88) and longer L (85–87 vs. 88–95), shorter Ta I (119–121 vs. 128), Ti I (134–136 vs. 155), Ge I (109 vs. 125), Ti III (176 vs. 192), Ge III (119 vs. 121); from *C. paolii* by number of normal setae on Ti II (20 vs. 19), absence k on Ge II (vs. presence) and shorter AW (62–64 vs. 78), W (90–91 vs. 98), Ta I (119–121 vs. 137), Ti I (134–136 vs. 157), Ge I (109 vs. 128), Ti III (176 vs. 201), Ge III (119 vs. 127). The differences between *C. stekolnikovi* and other species are mentioned in table 2 and 3.

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