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New host and the second record of *Charletonia shahriari* (Trombidiformes: Erythraeidae) from Iran

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The cosmopolitan genus *Charletonia*, which was established by Oudemans (1910) is known from larval and postlarval forms. Up to now, more than 90 species (from larval instars) of the genus *Charletonia* have been described throughout the world (Mağol and Wohltmann 2012; Tashakor *et al.* 2015).

Charletonia shahriari Saboori, Azimi & Shirdel, 2012 was described based on larvae, ectoparasitic on undetermined cercopids (Hemiptera: Cercopidae) in a wheat field in Tabriz city, East Azarbaijan Province (Saboori *et al.* 2012), Iran. In this paper, four specimens of the species were collected; ectoparasitic on an orthopteran host (*Calliptamus italicus* (Linnaeus)) in Gorgan city, Golestan Province and some additional biometric data are provided. Here, Orthoptera (specifically Caelifera: Acridiidae, Calliptaminae) are recorded as a new host taxon for this species.

Four larvae were collected ectoparasitic on hind wings of one grasshopper, *C. italicus* by M. Hakimitabar & S. Mohamadzade Namin in Shakhouh Olya village along Tuskestan road (36° 33' 44.50'' N, 54° 33' 54.89'' E, 2620 m a.s.l.), Gorgan city, Golestan Province, Iran on 29 June 2017. Mites were detached using an entomological pin, preserved in 75% ethanol, cleared in lactic acid and mounted on microscope slides using Faure medium (Walter and Krantz 2009). Measurements (given in micrometers, μm) were made using CHT Olympus microscope. The terminology and abbreviations are adopted from Saboori *et al.* (2009). Two mites (ARS-20180314-1a, 1b) are deposited in the Acarological Collection, Jalal Afshar Zoological Museum, Faculty of Agriculture, University of Tehran, Karaj, Iran and two other mites (ARS-20180314-1c, 1d) are deposited in the Arachnology collection of the Zoological Museum Hamburg (ZMH), Centrum für Naturkunde (CeNak) of the University of Hamburg.

Charletonia shahriari Saboori, Azimi & Shirdel, 2012

Diagnosis (based on the original description and new materials) – Larva: two setae between coxae II & III; $\text{fnTi} = 18\text{--}18\text{--}18$; $200 < \text{Ti III} < 250$; solenidion placed in proximal half of Ge I; chelicerae striated and punctate.

Additional metric data are provided in Table 1.

Table 1. Biometric data of *Charletonia shahriari* larva from Tabriz (Dizaj Olia village; data from Saboori *et al.* 2012) and from the new record in Gorgan (Shahkouh Olia village).

Character	From Shahkouh					From Tabriz	Character	From Shahkouh					From Tabriz
	1a	1b	1c	1d	range	n = 4		1a	1b	1c	1d	range	n = 4
SD	97	111	99	94	94–111	92–99	Ta I (H)	20	20	19	18	18–20	18
W	74	82	82	82	74–82	82–99	Ti I	181	205	196	191	181–205	191–203
AW	52	64	79	59	52–79	62–72	Ge I	146	156	149	149	146–156	141–164
MW	54	67	59	62	54–67	62–69	TFe I	92	104	92	92	92–104	85–102
PW	64	72	69	69	64–72	69–74	BFe I	99	101	114	99	99–114	99–109
SBa	10	10	12	-	10–12	13–15	Tr I	57	57	59	62	57–62	50–56
SBp	20	20	20	-	20	15–22	Cx I	64	64	59	62	59–64	50–64
ISD	67	79	69	67	67–79	69–74	Leg I	703	869	834	814	703–869	785–863
AP	45	50	45	45	45–50	20–22	Ta II (L)	144	166	156	149	144–166	149–161
AL	40	47	45	42	40–47	40–42	Ta II (H)	17	18	17	18	17–18	18
ML	37	45	40	37	37–45	37–41	Ti II	153	173	149	163	149–173	169–183
PL	37	47	42	40	37–47	40–44	Ge II	121	129	124	124	121–129	122–134
ASens	72	69	69	64	64–72	62–69	TFe II	74	89	79	82	74–89	75–92
PSens	87	99	92	-	87–99	75–99	BFe II	92	92	97	89	89–97	84–90
1a	53	57	62	60	53–62	60–62	Tr II	54	62	57	59	54–62	50–55
1b	62	69	64	64	64–69	64–67	Cx II	67	69	64	67	64–69	62–65
2a	50	57	52	45	45–57	60–62	Leg II	705	780	725	733	705–780	718–789
2b₁	59	67	62	54	54–67	40–57	Ta III (L)	168	186	191	156	156–191	164–174
2b₂	40	47	40	45	40–47	36–51	Ta III (H)	18	19	18	18	18–19	18–20
3a	42	45	43	47	42–47	50–52	Ti III	223	255	235	225	223–255	230–248
3b₁	52	59	50	54	50–59	44–57	Ge III	168	158	171	156	156–171	144–161
3b₂	37	47	40	42	37–47	50–52	TFe III	106	119	106	111	106–119	107–119
GL	131	149	141	134	131–149	-	BFe III	116	124	124	97	97–124	112–117
Ga	35	40	32	32	32–40	22–24	Tr III	62	67	59	62	59–67	50–62
aHy	15	24	17	17	15–24	30–50	Cx III	67	67	67	64	64–67	62–67
pHy	30	40	37	32	30–40	-	Leg III	911	975	953	871	871–975	881–947
Ta I (L)	161	181	166	161	161–181	161–169	IP	2460	2624	2512	2418	2418–2624	2684–2603

Corrected data compared with original description: fnTi I-III is corrected to 18-18-18 (16-16-17 in the original description), also fnTa I-III is corrected to 29-30-30 (29-31-32 in the original description), gnathosoma with two hypostomata but in the original paper cited only one hypostomata.

The result of this study showed that *Charletonia shahriari* may have wider host spectrum and geographic distribution in Iran than previously assumed. It was found from two different climatic regions of Iran i.e. East Azarbaijan (cold semi-arid climate) and Golestan provinces (temperate climate). Orthoptera are reported as a new host for this species. Shahkouh and its surrounding area are intact regions as a result it is expected to find more species in this region.

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