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HAL Id: hal-01535856

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Submitted on 9 Jun 2017

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Previous volumes (2010-2015): 250 € / year (4 issues)

Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d'avenir » programme (Labex Agro: ANR-10-LABX-0001-01)



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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

ZOOBANK — [17343A2F-4F7E-47B2-8C73-983C960ECB94](https://zoobank.org/17343A2F-4F7E-47B2-8C73-983C960ECB94)

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).

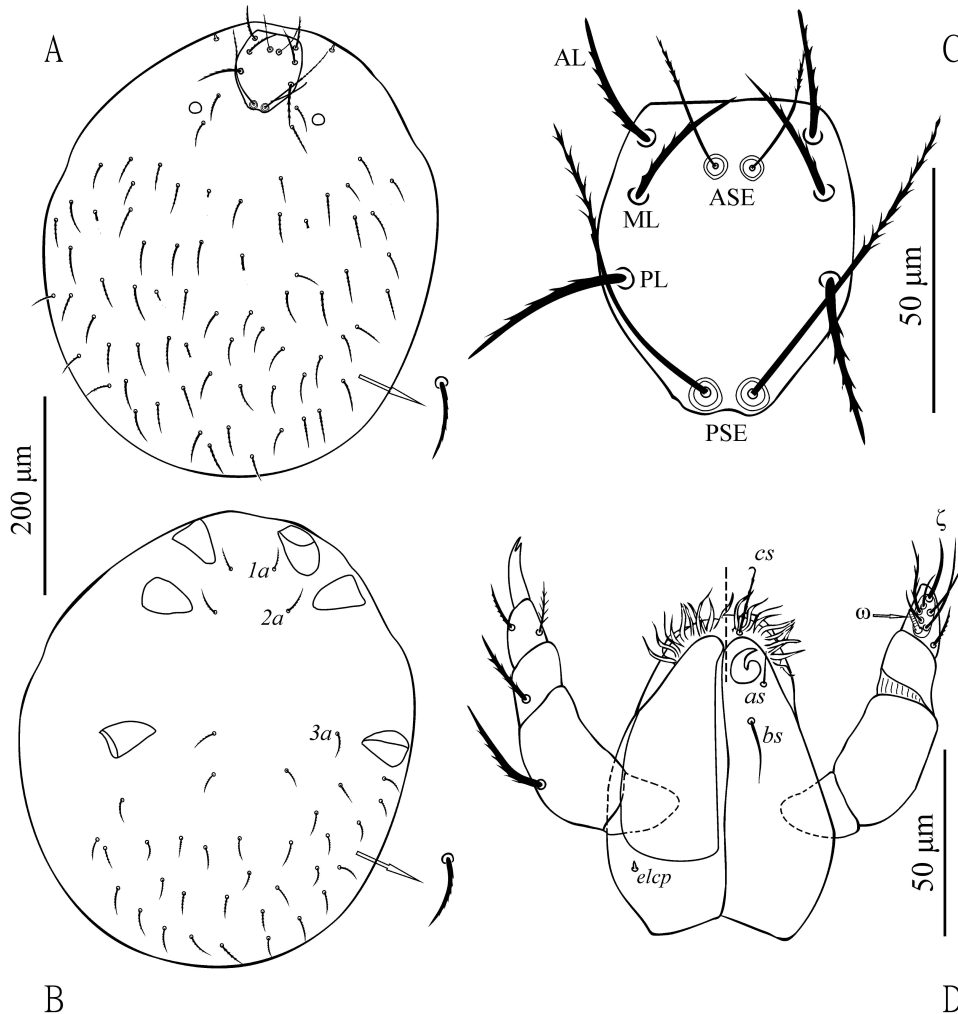


FIGURE 1: *Charletonia elbasani* n. sp. (larva). A – Idiosoma, dorsal view; B – Idiosoma, ventral view. C – Scutum; D – Gnathosoma.

Subfamily Callidosomatinae Southcott, 1957

***Charletonia* Oudemans, 1910**

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

Zoobank: [6AF7DD31-1492-4E25-86DB-BC37EAAA314](https://zoobank.org/6AF7DD31-1492-4E25-86DB-BC37EAAA314)

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

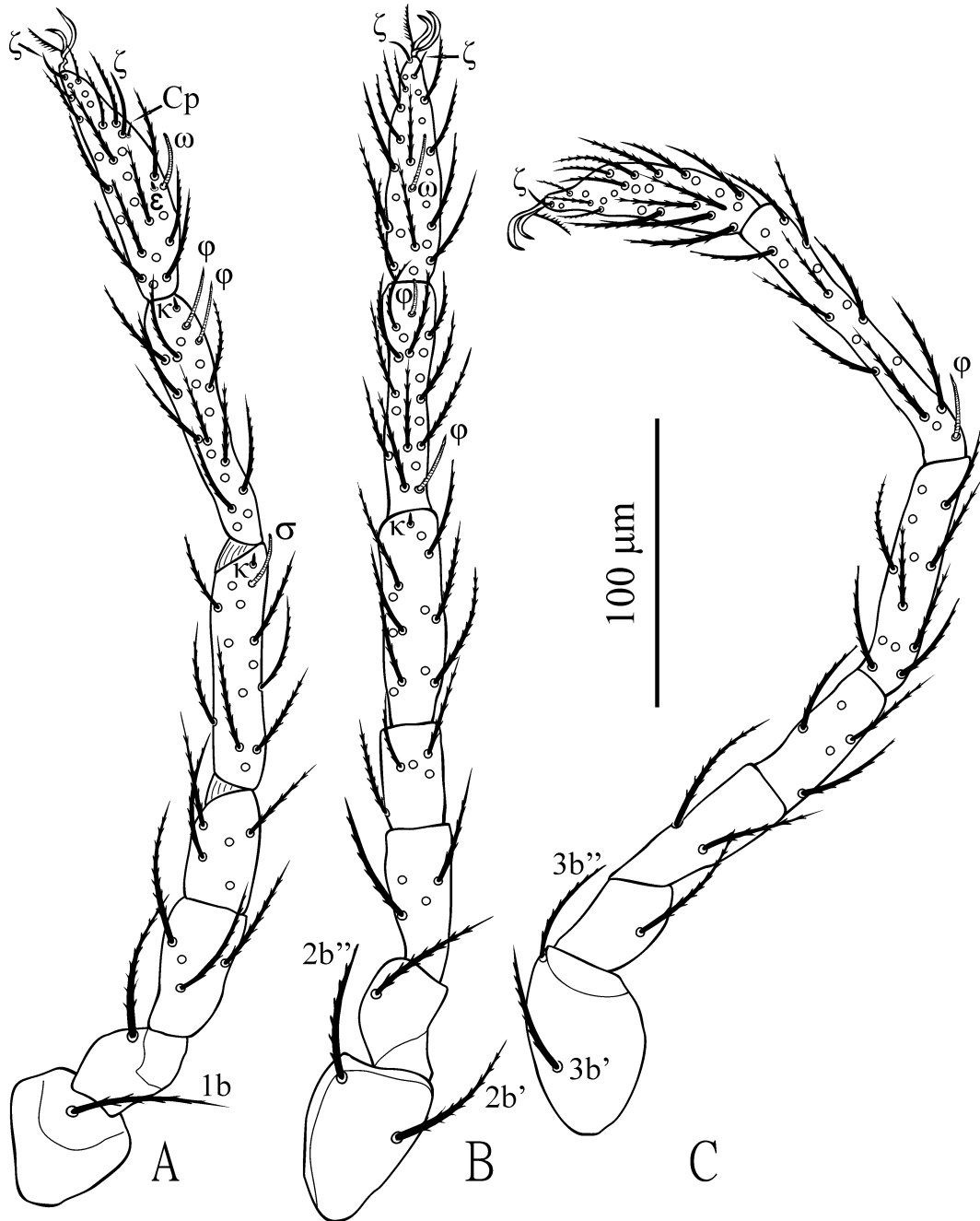


FIGURE 2: *Charletonia elbasani* n. sp. (larva). A – Leg I; B – Leg II; C – Leg III.

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 |
|-------------|-------|-------|-------|-------|-------|-------|---------|------------|----|----|----|----|----|----|-------|
| HL | 487 | 397 | 562 | 392 | 327 | 264 | 264-562 | <i>as</i> | 10 | 10 | - | - | - | 10 | 10 |
| IW | 400 | 247 | 440 | 325 | 234 | 190 | 190-440 | <i>bs</i> | 21 | 18 | 20 | 25 | 23 | 23 | 18-25 |
| L | 64 | 64 | 66 | 59 | 63 | 58 | 58-66 | <i>cs</i> | 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 |
| <i>1a</i> | 33 | 34 | 38 | 33 | 32 | 41 | 32-41 | Bf I | 55 | 61 | 56 | 53 | 53 | 51 | 51-61 |
| <i>2a</i> | 37 | 37 | 34 | 36 | 37 | 43 | 34-43 | Tr I | 33 | 34 | 30 | 36 | 31 | 33 | 31-36 |
| <i>3a</i> | 32 | 33 | 28 | 32 | 31 | 38 | 28-38 | Cx I | 37 | 44 | 48 | 44 | 46 | 31 | 31-48 |
| <i>1b</i> | 52 | 50 | 54 | 49 | 51 | 48 | 48-54 | Ta II | 70 | 68 | 67 | 71 | 73 | 67 | 67-73 |
| <i>2b'</i> | 50 | 51 | 46 | 52 | 52 | 51 | 46-52 | Ti II | 69 | 66 | 71 | 69 | 75 | 73 | 66-75 |
| <i>2b''</i> | 44 | 40 | 42 | 45 | 47 | 44 | 40-47 | Ge II | 70 | 65 | 68 | 66 | 69 | 70 | 66-70 |
| <i>3b'</i> | 40 | 44 | 33 | 38 | 33 | 42 | 33-44 | Tf II | 32 | 32 | 34 | 32 | 35 | 34 | 32-35 |
| <i>3b''</i> | 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-1 ω , 1 ϵ , 2 ζ , 1Cp, 24n (21 - 24n in paratypes); Ti-2 ϕ , 1 κ , 17n (16 - 17 in paratypes); Ge-1 σ , 1 κ , 12n; TFe-5n, BFe-4n; Tr-1n, Cx-1n. Leg II: Ta-1 ω , 2 ζ , 22n (20 - 24n in paratypes); Ti-2 ϕ , 16n (15-16n in paratypes); Ge- κ , 12n; TFe-5n, BFe-4n; Tr-1n; Cx-2n. Leg III: Ta-1 ζ , 24n (21 - 24n in paratypes); Ti-1 ϕ , 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-4NB ω ζ . 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> N=6 (range) | <i>C. kalithensis</i> N=2 (range) | <i>C. talebii</i> N=4 (range) | <i>C. blascoi</i> N=2 (range) | Character | <i>C. elbasani</i> N=6 (range) | <i>C. kalithensis</i> N=2 (range) | <i>C. talebii</i> N=4 (range) | <i>C. blascoi</i> N=2 (range) |
|-------------|--------------------------------------|---|-------------------------------------|-------------------------------------|-----------|--------------------------------------|---|-------------------------------------|-------------------------------------|
| IL | 264-562 | 336-648 | 545-1060 | | <i>as</i> | 10 | | 6-8 | 8 |
| IW | 190-440 | 247-482 | 139-842 | | <i>bs</i> | 18-25 | 22 | 8-9 | 13 |
| L | 58-66 | 72-76 | 85-99 | 84-87 | <i>cs</i> | 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 | |
| <i>1a</i> | 32-41 | 34-38 | 12-25 | 20-24 | Tr I | 31-36 | 38 | 28-34 | |
| <i>2a</i> | 34-43 | 48-50 | 20-29 | 27-29 | Cx I | 31-48 | 52 | 34-40 | |
| <i>3a</i> | 28-38 | 34-36 | 13-20 | | Ta II | 67-73 | 74-76 | 71-76 | 62-63 |
| <i>1b</i> | 48-54 | 54-64 | 38-49 | 56-60 | Ti II | 66-75 | 86-90 | 56-65 | 50-54 |
| <i>2b'</i> | 46-52 | 54-60 | 33-40 | 40-52 | Ge II | 66-70 | 76-80 | 50-56 | 48-57 |
| <i>2b''</i> | 40-47 | 44-50 | 19-25 | 36-54 | Tf II | 32-35 | 42-46 | 29-35 | |
| <i>3b'</i> | 33-44 | 46-48 | 25-31 | 44-50 | Bf II | 47-52 | 52 | 38-45 | |
| <i>3b''</i> | 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 κGeII (*vs.* absent in *C. kalithensis*), the number of NDV (90 – 108 *vs.* ≈ 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. N=6 (range) | <i>C. kalithensis</i> N=2 (range) | <i>C. talebii</i> N=4 (range) | <i>C. blascoi</i> N=2 (range) | Character | <i>C. elbasani</i> sp.nov. N=6 (range) | <i>C. kalithensis</i> N=2 (range) | <i>C. talebii</i> N=4 (range) | <i>C. blascoi</i> N=2 (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.

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