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Notes on *Erythraeus phalangoides* (Acari: Trombidiformes: Erythraeidae)

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The genus *Erythraeus* Latreille, 1806 is established based on *Acarus phalangoides* De Geer, 1778 from Europe as type species. It is divided into two subgenera *Erythraeus* and *Zaracarus* based on characters of the larval stage (Southcott 1995). The subgenus *Erythraeus* is divided into two groups based on the number of basifemoralae reported by different authors (e.g., Saboori *et al*. 2004, Haitlinger 2011), one group BFe formula: 2-2-2 or 2-2-1 and the other group 3-3-3. *Erythraeus* (*E*.) *phalangoides* belongs to the first group, which also includes: *E*. (*E*.) *tinnae* Haitlinger, 1997 from the Canary Islands, *E*. (*E*.) *picaforticus* Haitlinger, 2002 from the Balearic Islands, *E*. (*E*.) *chinensis* (Zheng 2002) from China, *E*. (*E*.) *kacperi* Haitlinger, 2004 from Cambodia, *E*. (*E*.) *yangshounicus* Haitlinger, 2006 from China, *E*. (*E*.) *etnaensis* Haitlinger, 2011 from Italy, *E*. (*E*.) *serbicus* Šundić, Haitlinger & Hakimitabar, 2015 from Serbia, *E*. (*E*.) *walii* Kamran, Afzal, Raza, Bashir & Ahmad, 2011 from Pakistan, *E*. (*E*.) *aphidivorous* Šundić, Haitlinger, Michaud & Colares, 2015 from USA and *E*. (*E*.) *hubeiensis* Xu, Yi, Guo & Jin, 2019 (Southcott 1961; Haitlinger 1997, 2002, 2004, 2006, 2011; Kamran *et al*. 2011; Šundić *et al*. 2015a, b; Stålstedt *et al*. 2016; Xu *et al*. 2019). In this paper, we present new data on larval specimens of *E*. (*E*.) *phalangoides* deposited in the South Australian Museum (SAM), and transfer *Erythraeus* (*Erythraeus*) *walii* Kamran, Afzal, Raza, Bashir & Ahmad, 2011 to the subgenus *Erythraeus* (*Zaracarus*). The lectotype and paralectotypes (ACA1548A, ACA1548B–C & ACA1549B–C) of the larval specimens of *E*. (*E*.) *phalangoides* are studied in the SAM. The number of normal and specialized setae on legs, idiosoma, and gnathosoma were counted. Measurements of *E*. (*E*.) *phalangoides* are presented in Table 1. The terminology and abbreviations are adapted from Wohltmann *et al*. (2006) and Saboori *et al*. (2009) and measurements are given in micrometers (µm).

Erythraeus (*Erythraeus*) *phalangoides* De Geer, 1778

Diagnosis

AL not inflated basally, ASens short (14–32), fD = 34–36, fnBFe = 2-2-2, Ti III 145–200 (Stålstedt *et al*. 2016), *1a* 70–104.

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Southcott (1961) presented a good description of the species but some meristic and metric data are missing in his paper which is presented below.

Leg segmentation formula 7–7–7. Leg setal formula: Leg I: Ta – 1ω, 1ε, 2ζ, 1Cp, 26n; Ti – 2φ, 1Cp, 1κ, 14n; Ge – 1σ, 1κ, 8n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 1n. Leg II: Ta – 1ω, 2ζ, 1Cp, 23n; Ti – 2φ, 15n; Ge – 1κ, 8n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 1n. Leg III: Ta – 1ζ, 24n; Ti – 1φ, 15n; Ge – 8n; TFe – 5n; BFe – 2n; Tr – 1n; Cx – 1n. fPp = 0-B-B-BBB_2-NNNNNNωζz. Measurements are given in Table 1.

Table 1. Metric data, number of dorsal and ventral setae of idiosoma (fD + fV) of *Erythraeus* (*Erythraeus*) *phalangoides* larvae deposited in SAM [Metric data of SD to PSens are according to Southcott (1995)].

Character	ACA 1548A	ACA 1548B	ACA 1548C	ACA 1549A	ACA 1549B	ACA 1549C	ACA 1549D	Range
SD	109	108	100	103	112	104	102	102–112
W	155	141	146	147	167	156	146	141–167
AW	63	76	77	69	68	64	66	63–77
PW	105	118	108	115	115	107	112	105–118
AA	19	18	18	19	15	18	20	15–20
SB	18	16	16	18	17	21	18	16–21
ISD	70	70	65	69	67	67	68	65–70
AP	60	58	51	65	64	55	57	51–65
AL	83	73	84	75	77	74	84	73–84
PL	58	57	62	55	62	59	62	55–62
ASens	broken	14	17	20	24	17	16	14–24
PSens	broken	62	67	58	66	66	63	58–67
1a	99	89	94	not clear	not clear	not clear	–	89–99
1b	97	79	84	not clear	92	99	–	79–99
2b	30	25	27	not clear	not clear	not clear	–	25–30
3a	30	30	32	not clear	not clear	not clear	–	30–32
3b	27	30	25	not clear	25	35	–	25–35
PaScFed	45	42	50	not clear	37	not clear	–	37–50
PaScGed	74	74	82	not clear	69	not clear	–	69–82
Ta I (L)	99	89	87	not clear	not clear	99	–	87–99
Ti I	124	124	111	not clear	not clear	136	–	111–136
Ge I	94	82	64	not clear	not clear	99	–	64–99
TFe I	62	79	52	not clear	not clear	62	–	52–79
BFe I	74	64	59	not clear	not clear	54	–	54–74
Tr I	50	42	37	not clear	not clear	40	–	37–50
Cx I	69	62	62	not clear	not clear	69	–	62–69
Ta II (L)	84	84	82	not clear	not clear	89	–	82–89
Ti II	111	111	87	not clear	not clear	106	–	87–111
Ge II	87	77	62	not clear	not clear	87	–	62–87
TFe II	87	59	54	not clear	not clear	62	–	54–87
BFe II	54	64	52	not clear	not clear	74	–	52–74
Tr II	50	50	37	not clear	not clear	62	–	37–62
Cx II	84	74	74	not clear	not clear	not clear	–	74–84
Ta III (L)	106	99	94	not clear	not clear	not clear	–	94–106
Ti III	176	173	149	not clear	not clear	not clear	–	149–176
Ge III	92	87	69	not clear	not clear	not clear	–	69–92
TFe III	74	79	87	not clear	not clear	not clear	–	74–87
BFe III	87	74	62	not clear	not clear	not clear	–	62–87
Tr III	54	40	42	not clear	not clear	not clear	–	40–54
Cx III	79	62	72	not clear	not clear	not clear	–	62–79
fD	36	34	30	not clear	not clear	not clear	–	30–36
fV	12	12	12	not clear	not clear	not clear	–	12

Remarks (according to new data and Stålstedt *et al*. 2016)

Erythraeus (*E*.) *phalangoides* belongs the group of species with BFe formula: 2-2-2 (or 2-2-1). It differs from *E*. (*E*.) *tinnae* (one specimen) by shorter PW (100–127 vs. 144), PL (50–74 vs. 104), ASens (14–32 vs. 36), PSens (58–81 vs. 92), Ta I (87–115 vs. 196), Ti I (98–141 vs. 300), Ge I (64–110 vs. 220), Ta II (80–107 vs. 182), Ti II (87–131 vs. 304), Ge II (62–96 vs. 188), Ta III (90–124 vs. 204), Ti III (145–200 vs. 440) and Ge III (69–119 vs. 224); from *E*. (*E*.) *picaforticus* (one specimen) by shorter PW (100–127 vs. 136), ISD (63–75 vs. 56), PL (50–74 vs. 84), ASens (14–32 vs. 46), PSens (58–81 vs. 90), Ta I (87–115 vs. 156), Ti I (98–141 vs. 214), Ge I (64–110 vs. 166), Ta II (80–107 vs. 142), Ti II (87–131 vs. 224), Ge II (62–96 vs. 140), Ta III (90–124 vs. 172), Ti III (145–200 vs. 362), Ge III (69–119 vs. 188); from *E*. (*E*.) *chinensis* (one specimen) by the shorter AW (63–89 vs. 49), PW (100–127 vs. 87), PL (50–74 vs. 89), ASens (14–32 vs. 49), Ti III (145–200 vs. 370); from *E*. (*E*.) *kacperi* (one specimen) by shorter Ta I (87–115 vs. 134), Ti I (98–141 vs. 184), Ge I (64–110 vs. 150), Ta II (80–107 vs. 120), Ti II (87–131 vs. 180), Ge II (62–96 vs. 120), Ta III (90–124 vs. 132), Ti III (145–200 vs. 280) and Ge III (69–119 vs. 144); from *E*. (*E*.) *yangshounicus* (one specimen) by shorter ASens (14–32 vs. 62), Ta I (87–115 vs. 192), Ti I (98–141 vs. 346), Ge I (64–110 vs. 230), Ta II (80–107 vs. 184), Ti II (87–131 vs. 332), Ge II (62–96 vs. 184), Ti III (145–200 vs. 496), Ge III (69–119 vs. 236); from *E*. (*E*.) *etnaensis* (one specimen) by shorter AL (65–95 vs. 108), ASens (14–32 vs. 38), Ta I (87–115 vs. 164), Ti I (98–141 vs. 262), Ge I (64–110 vs. 198), Ta II (80–107 vs. 162), Ti II (87–131 vs. 280), Ge II (62–96 vs. 168), Ta III (90–124 vs. 172), Ti III (145–200 vs. 406) and Ge III (69–119 vs. 218); from *E*. (*E*.) *serbicus* (5 specimens) by longer AW (64–89 vs. 44–48), ISD (63–75 vs. 41–47), shorter ASens (14–32 vs. 25–33), Ta I (87–115 vs. 118–133), Ti I (98–141 vs. 175–190), Ge I (64–110 vs. 128–138), Ta II (80–107 vs. 111–121), Ti II (87–131 vs. 180–192), Ta III (90–124 vs. 124–138), Ti III (145–200 vs. 261–274) and Ge III (69–119 vs. 128–143); from *E*. (*E*.) *aphidivorous* (2 specimens) by shorter SD (85–117 vs. 117–125), ASens (14–32 vs. 57–67), Psens (58–81 vs. 80–81), Ta I (87–115 vs. 169–172), Ti I (95–141 vs. 278), Ge I (64–110 vs. 195–198), Ta II (80–107 vs. 155–156), Ti II (87–131 vs. 266–269), Ge II (62–96 vs. 157–163), Ta III (90–124 vs. 179–184), Ti III (145–200 vs. 401–405) and Ge III (69–119 vs. 213–216).

Erythraeus (*Zaracarus*) *walii* Kamran, Afzal, Raza, Bashir & Ahmad, 2011

This species has obliquely-set sockets and AL setae are about twice longer than PL. For this reason, we transfer this species from the subgenus *Erythraeus* (*Erythraeus*) to *Erythraeus* (*Zaracarus*).

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