

Discovery of Subgenus *Erythraeus* (Acari: Erythraeidae: *Erythraeus*) From Punjab, Pakistan

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Abstract. A new species *Erythraeus* (*Erythraeus*) *walii* (Erythraeidae) has been described in detail along with illustrated diagrams from a larva collected from *Sorghum halepense* from Faisalabad, Punjab, Pakistan. This species belongs to the species group with basifemoral setal formula 2-2-2 and has been compared with all species of this group. It was first record of subgenus *Erythraeus* from Pakistan.

Keywords: Subgenus *Erythraeus*, subgenus *Zaracarus*, mites.

INTRODUCTION

Latreille (1806) erected genus *Erythraeus* (Erythraeidae) and designated *Acarus phalangoides* (adult) deGeer, 1778 by original designation as its type species. Southcott (1995) categorized genus *Erythraeus* into two subgenera viz., *Zaracarus* and *Erythraeus* and designated *Erythraeus* (*Zaracarus*) *lancifer* as type species of subgenus *Zaracarus*. In subgenus *Erythraeus* 32 species are known from Europe and Asia and have been described both from adults and larvae. Adults and nymphs of subgenus *Erythraeus* live freely and feed on phytophagous mites, small insect pests like thrips, aphids, plant hoppers, mealy bugs etc., their eggs and eggs of many lepidopteran insect pests (Southcott, 1961; Whitcomb and Bell, 1964; Tandon and Lal, 1976; Barrion *et al.*, 1981; Chhillar *et al.*, 2007). Larvae of this genus parasitize different insects *i.e.* bugs and aphids etc. or live freely on different plants (Goldarazena and Zhang, 1998; Saboori and Babolmorad, 2000; Saboori and Nowzari, 2001).

Authors have collected one new species of subgenus *Erythraeus* (*Erythraeus*, Erythraeidae) from *Sorghum halepense* and *Cynodon dactylon* from Faisalabad and Rajanpur cities of Punjab, Pakistan and have described it in detail along with diagrams and collection data.

MATERIALS AND METHODS

Mites larvae were collected from leaves of *Sorghum halepense* and *Cynodon dactylon*. Leaves of these grasses were shaken on a white piece of paper, mites larvae were picked with help of camel hair brush and preserved in 70 % ethyl alcohol having few drops of glycerin in small vials. Mite specimens were permanently mounted on glass slides using Hoyer's medium (Chhillar *et al.*, 2007). The mite slides were examined under higher power phase contrast microscope. The drawings of different body parts of mite specimens were made by using an ocular grid. The specimens were identified with the help of published descriptions and diagnostic keys. Measurements were taken in micrometres (μm). The terminology and abbreviations were adopted from Haitlinger and Saboori (1996) and Goldarazena and Zhang (1998). Measurements of the holotype and 4 paratypes are presented in Table I.

RESULTS AND DISCUSSION

Erythraeus (*Erythraeus*) *walii*, new species
(Fig. 1)

Description of holotype larva

Dorsum

Idiosoma oval in shape, 260 μm long, 195 μm wide. Total length from tips chelicerae to posterior pole of idiosoma 391 μm . Scutum present dorsally

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Table I.- Metric data of *Erythraeus (Erythraeus) walii*, new species larva.

Character	Holotype	Paratypes				Character	Holotype	Paratypes			
		1	2	3	4			1	2	3	4
IL	260	261	265	258	257	Ti I	175	176	173	176	175
IW	195	195	193	189	188	Ge I	137	138	139	137	140
L	83	82	80	78	77	Tfe I	87	85	88	87	89
W	117	115	114	120	112	Bfe I	100	101	102	100	103
AW	47	48	45	45	48	Tr I	50	51	50	53	52
PW	75	75	74	74	77	Cx I	56	56	53	52	53
AA	10	9	10	10	9	Leg I	780	780	777	781	789
SB	13	121	13	13	14	Ta II(L)	110	111	112	111	114
ISD	60	63	58	61	63	Ta II(H)	15	14	15	14	16
AP	47	46	47	45	46	Ti II	158	158	160	163	159
AL	75	73	78	75	74	Ge II	112	111	113	108	109
PL	52	50	53	50	52	Tfe II	75	77	75	76	74
AM	27	26	27	26	28	Bfe II	87	86	84	86	89
S	67	67	65	68	64	Tr II	50	51	53	54	50
DS	33-42	34-43	33-43	32-42	33-43	Cx II	65	64	66	65	67
PDS	33-42	33-42	34-44	33-43	32-42	Leg II	657	658	663	663	662
1a	50	51	51	50	52	TaIII (L)	125	127	126	125	127
2a	25	25	26	26	25	TaIII (H)	12.5	13	12.5	13	13
Cox. I	75	76	73	75	71	Ti III	250	251	248	249	250
Hy	33	32	34	33	35	Ge III	125	124	123	126	125
GL	120	118	123	119	121	Tfe III	113	112	114	112	115
PaScFed	50	51	50	50	51	Bfe III	113	113	113	111	112
PaScGed	62	61	63	64	60	Tr III	50	51	52	50	52
Ta I(L)	175	173	172	176	177	Cx III	67	67	64	68	69
Ta I(H)	15	15	14.5	15	16	Leg III	843	845	840	841	850
						IP	2280	2283	2280	2285	2301

Abbreviations used: H, holotype; P, paratype; IL, Length of body without gnathosoma; IW, width of body; L, length of scutum; W, width of scutum; AW, distance between centers of bases of AL scutalae; PW, distance between centres of bases of PL scutalae; AA, distance between centres of external orifices of scutal anterior sensillae; SB, distance between centers of external orifices of posterior sensillae; ISD, inter sensillary distance between levels of centres of anterior and posterior sensillary setae of scutum; AP, distance between centres of bases of AL and PL scutalae; AL, anterolateral scutala; PL, posterolateral scutala; AM, anterior sensillary seta of dorsal scutum; S, Posterior sensillary seta of dorsal scutum; DS, length of dorsal idiosomal setae; PDS, length of posterior dorsal setae of idiosoma; St, length of setae between coxae I and coxae II on ventral surface of idiosoma; GL, length of gnathosoma measured between bases of palp coxae and tip of chelicerae; PaScFed, length of seta on dorsal surface of palpfemur; PaScFev, length of seta on ventral surface of palpfemur; PaScGed, length of seta on dorsal surface of palpgenu; PaScGev, length of seta on ventral surface of palpgenu; NDV, total number of dorsal and ventral setae; fD, number of dorsal setae; fV, number of ventral setae. N, nude setae; B, barbed setae; Hy, length of posterior hypostomala; Ta (L), length of tarsus; Ta (H), height of tarsus; Ge, length of genu; Tf, length of telofemur; Bf, length of basifemur; Tr, length of trochanter; Cx, length of coxa.

on idiosoma, wider than long, 117µm wide, 83µm long, densely punctate entirely, convex anteriorly, posteriorly slightly concave and carries two pairs of sensillae and two pairs of scutalae. Posterior pair of sensillae (S) more than twice the length of anterior sensillae (AM), AM finely barbed while S without ciliations, both with pointed tips, AM 28µm, S 67µm long, smooth (without setules) and lies at posterior pole of scutum. Cuticular lines surround the the posterior pair of sensillae (S) in shape of flask. AL scutalae longer than PL scutalae; AL

75µm, PL 52µm long, both setulose and blunt ended. AL lie at the level of AM bases, PL lie slightly anterior to the levels of S bases (Fig.1A).

Two pairs of eyes present on idiosoma on each lateral side of scutum, anterior eye 15µm across, at the level of S bases, posterior eye 12 µm across. Dorsal setae on idiosoma, 16 pairs, all with long setules on their entire lengths and ranging in lengths from 30-42µm, DS=33-42; PDS=33-42; fD=32 (Fig.1A).

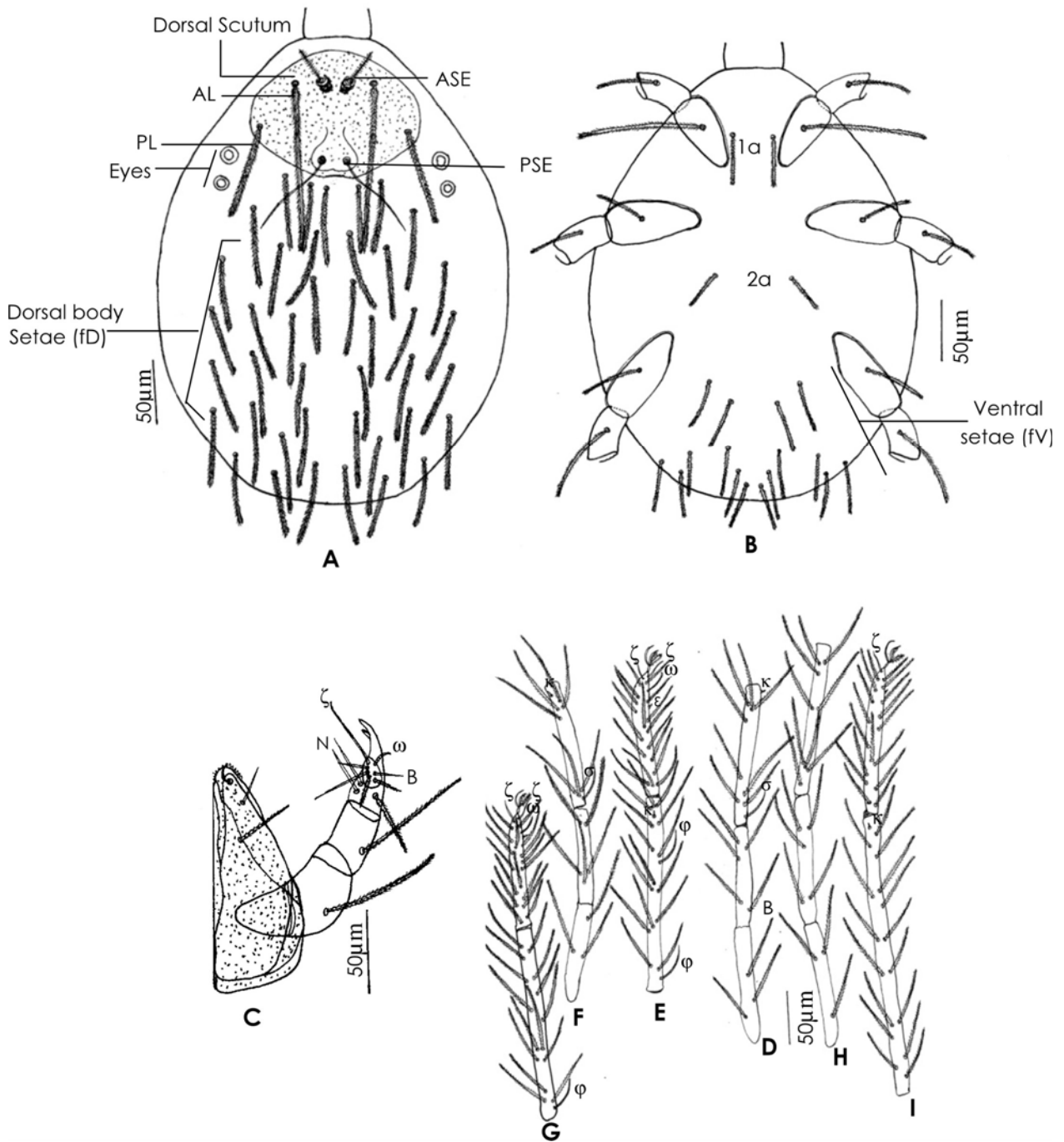


Fig.1. *Erythraeus (E) walii*, new species (larva): A, idiosoma (dorsal view); B, idiosoma (ventral view); C, gnathosoma; D and E, leg I; F and G, leg II; H and I, leg III.

Venter

Idiosoma ventrally bears one pair of sternalae 1a between coxae I, 50µm long; one pair of

sternalae 2a in between the coxae II-III, 25µm long; 5 pairs of setae behind the coxae III. All ventral setae setulose and blunt ended. Setulose setae

present behind the coxae III ranging in lengths from 25-30 μ m. fV=10; NDV=32+10=42.

Coxae I-III each with one coxalae, all coxalae blunt ended and with long setules; Coxalae I more than two times longer than the length of coxalae II and almost twice the length of coxalae III (Fig.1B).

Gnathosoma

Gnathosoma cone shaped, compact and flask shape in outline, galaelae simple, 20 μ m long, hypostomalae 33 μ m, finely barbed, supercoxalae absent. Palpfemur robust with one barbed (densely setulose) seta, palp genu with one barbed and blunt ended seta; palptibia with 1 nude and one barbed setae; palptibial claw bifurcate with peg like accessory claw; palptarsus with 7 setae including one eupathidium, one solenidium and one long seta (Fig.1C).

Palp setal formula

fPp: 0-B-B-BN- ω ζ NNNBB

Legs

Legs three pairs, all legs longer than body length; leg III the longest one. IP = 780+657+843 = 2280 (Fig.1D-I).

Leg setal formula

Leg I: Ta-1 ω , 1 ϵ , 2 ζ , 21B; Ti-1 ϕ , 1 κ , 14B; Ge-1 σ , 1 κ , 8B; Tfe-5B; Bfe-2B; Tr-1B; Cx-1B

Leg II: Ta-1 ω , 1 ϵ , 2 ζ , 15B; Ti-1 ϕ , 1 κ , 14B; Ge-1 σ , 1 κ , 8B; Tfe-5B; Bfe-2B; Tr-1B, Cx-1B

Leg III: Ta-1 ϵ , 1 ζ , 18B; Ti-1 ϕ , 1 κ , 14B; Ge-7B; Tfe-5B; Bfe-2B; Tr-1B; Cx-1B

Etymology

Name of this new species is derived after the name of late Prof. Dr. Wali Muhammad Chaudhri on his great contribution in Acarology.

Type

Holotype larva was collected from University of Agriculture, Faisalabad, Horticulture garden on 18-07-05 (Muhammad Kamran) from baru plants (*Sorghum helepense*). Paratypes 4 larvae, collection data of 1 larvae same while 3 larvae were collected from Rajanpur city near Railway station on 9-10-05 (Muhammad Kamran) from khabbal grass (*Cynodon*

datylon). All specimens have been deposited in Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture, Faisalabad.

Remarks

In subgenus *Erythraeus* 32 species are known from Europe and Asia This new species *Erythraeus (E.) walii* belongs to the species group with basifemoral setal formula 2-2-2. This group includes four species viz. *E. (E.) adrastus* Southcott, 1961 from Denmark, *E. (E.) tinnae* Haitlinger, 1997 from Canary Islands, Tenerife, *E. (E.) picaforticus* Haitlinger, 2002 from Balearic Islands, Mallorca and *E. (E.) smolyanensis* Haitlinger, 2009 from Bulgaria (Southcott, 1961, Haitlinger, 1997, 2002, 2009).

Erythraeus walii sp. nov. differs from *E. (E.) adrastus* in fD (32 vs. 36), fV (10 vs. 12), sternalae (1a) (50 vs. 89), IP (2280-2301 vs. 1805), legIII (843 vs. 680), width of scutum (W) (112-117 vs. 141-167), PW (74-77 vs. 105-118) and S (smooth vs. nude); from *E. (E.) tinnae* in fD (32 vs. 47), fV (10 vs. 15), IP (2280-2301 vs. 3756), TiIII (248-251 vs. 301), GL (118-121 vs. 182), ISD (58-63 vs. 76), coxala I (71-76 vs. 128) and DS (33-42 vs. 70-130); from *E. (E.) picaforticus* in fD (32 vs. 72), fV (10 vs. 24), IP (2280-2301 vs. 3034), GL (118-121 vs. 174), DS (33-42 vs. 70-76), legIII (840-850 vs. 1186), width of scutum (W) (112-120 vs 190), PL (50-53 vs. 84) and coxala I (71-76 vs. 114); from *E. (E.) smolyanensis* in fD (32 vs. 38), fV (10 vs 14), IP (2280-2301 vs. 4834-4986) and TiIII (248-251 vs. 584-628).

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