

A New Species of the Genus *Leptus* Latreille (Acari: Erythraeidae) Parasitizing Aphids in Pakistan

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Abstract. - *Leptus pakistanensis*, new species has been described and illustrated in detail from larvae parasitizing on *Aphis* spp. (Aphididae: Homoptera) from district Okara, Punjab, Pakistan. This is the first record of this genus from Pakistan.

Key words: *Leptus pakistanensis* new species, *Leptus* larvae, aphid parasitizing larvae.

INTRODUCTION

The genus *Leptus* Latreille (1796) is cosmopolitan in distribution and comprises more than 90 species, most of which are known from the hexapod larvae. *Leptus* larvae are ectoparasites of a wide range of arthropods (Welbourn, 1983), while the octopod nymphs and adults are free-living predators of other arthropods (Wendt *et al.*, 1992). Southcott (1989, 1993) described two species of this large genus parasitizing on bees: *Leptus ariel* (Southcott, 1989) has been found on the European honey bee in Guatemala and *Leptus monteithi* (Southcott, 1993) has been described from colletid bees (*Leioproctus* sp., Colletidae, Hymenoptera) from Australia (Tasmania).

A lot of taxonomic work on this genus has been done worldwide (Southcott, 1961, 1991, 1992, 1993, 1999; Haitlinger, 1990, 1994, 1998, 1999, 2002, 2006a,b, 2007a,b,c; Zheng, 1996; Saboori and Atamehr, 1999; Saboori and Ostovan, 2000; Saboori and Arbabi, 2003). From Pakistan the authors have reported this genus for the first time and described a new species of genus *Leptus* on the larval basis parasitizing aphids feeding on baru grass (*Sorghum halepense*).

MATERIALS AND METHODS

Larval specimens of *Leptus* parasitizing aphids (Homoptera) were captured by beating leaves

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of a weed baru grass (*Sorghum halepense*) on a white paper. An iron stainless bar, 20 cm long, was used for shaking and beating. The specimens were stored in vials containing 75% ethyl alcohol having few drops of glycerin. The description of *Leptus pakistanensis* new species is based on the holotype mounted in Hoyer's medium housed at Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad, Pakistan. The terminology and abbreviations were adopted from Haitlinger and Saboori (1996) and Goldarazena and Zhang (1998). All measurements are given in micrometres.

The identification of specimens was done with the help of existing keys and literature. Measurements of the holotype are presented in Table I.

RESULTS AND DISCUSSION

Leptus pakistanensis, new species
(Fig. 1)

Description of holotype larva

Dorsum

Idiosoma oval in shape 300 μ m long, 230 μ m wide, total length of body from tips of chelicerae to posterior pole of idiosoma 440 μ m. Scutum present dorsally on idiosoma, wider than long, 66 μ m long, 74 μ m wide, finely punctate throughout, concave anteriorly, posteriorly blunt ended, carries two pairs of sensillae and two pairs of scutalae laterally.

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Posterior pair of sensillae (PSE) more than twice the length of anterior pair of sensillae (ASE); ASE 27 μm , PSE 57 μm , SBa 9 μm , SBp 11 μm ; both

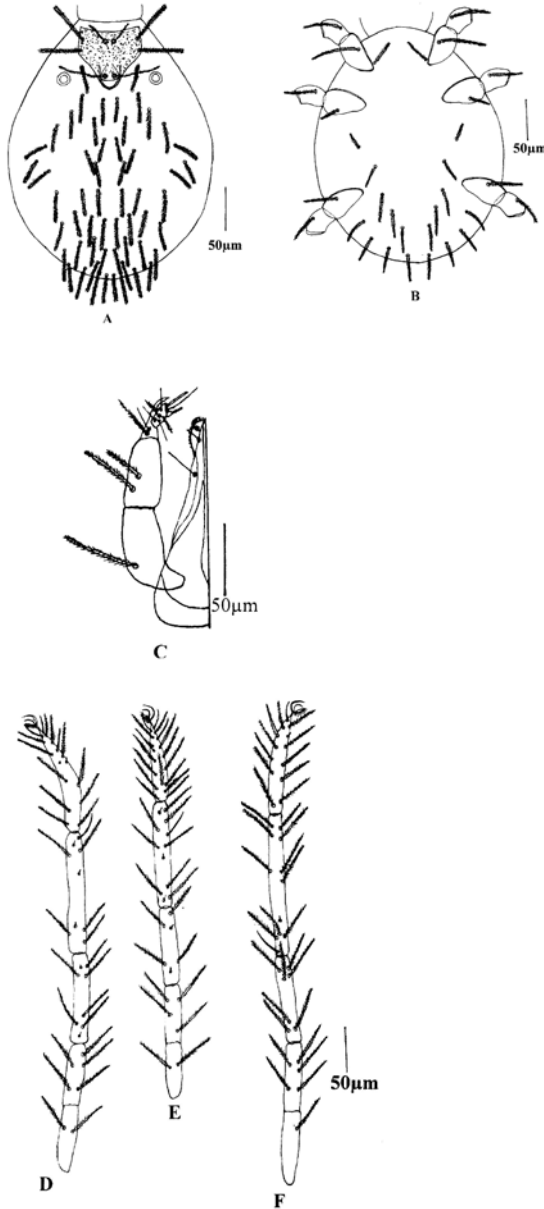


Fig. 1. *Leptus pakistanensis* new species, A, dorsal view; B, ventral side; C, gnathosoma; D, leg-I (femur-tarsus); E, leg-II (femur-tarsus); F, leg-III (femur-tarsus).

sensillae ciliated on their entire lengths. Bases of posterior pair of sensillae are surrounded laterally by a thick cuticular line in form of a cup. On inner

side of these cuticular lines, PSE bases are surrounded by a thin line in shape of flask. ISD 42 μm ; AL and PL scutalae almost equal in length,

Table I.- Metric data of *Leptus pakistanensis* new species larva.

Character	Holotype	Character	Holotype
IL	300	DS	30 – 37
IW	230	PDS	33-37
L	66	St I	33
W	74	St II	33
AW	62	Cx I	60
PW	70	Cx II	25
SBa	9	Cx III	40
SBp	11	GL	125
ISD	42	PaSc Fed	50
AP	12	PaSc Fev	--
AL	50	PaSc Ged	42
PL	50	PaSc Gev	27
ASE	27	Hy	25
PSE	57	Ta I (L)	125
Ta I (H)	19	Tr II	37
Ti I	137	Cx II	52
Ge I	100	Leg II	532
Tfe I	73	Ta III (L)	125
Bfe I	77	Ta III (H)	15
Tr I	35	Ti III	162
Cx I	50	Ge III	98
Leg I	527	TfeIII	80
Ta II (L)	105	BfeIII	82
Ta II (H)	15	TrIII	40
Ti II	120	CxIII	53
Ge II	88	Leg III	640
Tfe II	67		
Bfe II	63		

*Abbreviations used: H, Holotype; 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; SBa, distance between centres of external orifices of scutal anterior sensillae; SBp, 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; ASE, anterior sensillary seta of dorsal scutum; PSE, 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.

both 50 µm long with long and dense setules; AL present at same level as ASE bases (Fig.6A). AW 62 µm, PW 70 µm; AP 12 µm. One eye on each side of idiosoma at the level of PSE bases, both oval in shape and 17 µm across. Dorsal body setae on idiosoma, 28 pairs, with long dense setules, blunt ended and ranging in lengths from 30 – 37.5µm. Setae gradually long towards posterior pole of idiosoma, DS – 30 –37; PDS = 33-37; fD = 56 (Fig.1A).

Venter

All ventral setae with long dense setules and blunt ended. Sternalae 1a 33 µm long, present in between coxae I; sternalae 2a also 33 µm long, present in between coxae II, 4 intercoxalae between coxae II and III. First pair of intercoxalae 20 µm long, second pair 30 µm long. 7 pairs of setae present behind coxae III ventrally on idiosoma. fV=14; NDV = 56 + 14 = 70. Coxae I – III each with one coxala. All coxalae bearing long, dense setules and blunt ended. Coxalae I the longest one, more than twice the length of coxalae II and 1.5 times longer than coxalae III; Coxalae I-III measuring 60µm, 25µm and 40µm (Fig.1B).

Gnathosoma

Gnathosoma narrow, cone shaped, with short, pointed tipped, simple galealae, 10 µm long. Hypostomalae also simple with pointed tips, 25 µm long. Palpfemur with one palpfemurala, palpgenu with two palpgenualae; Palpfemura and palpgenualae blunt ended and set with long dense setules and blunt ended. Palptibia with one simple and one setulose (barbed) setae with pointed tips; Palptarsus with 8 setae including solenidion and eupathidium (Fig.1C).

Palp setal formula

fPp: o – B – BB – BN-ω ζ NNNNBB

Legs

Legs three pairs; legs I – III measuring 527 µm, 532 µm and 640 µm long respectively. All legs

longer than body length. Leg III the longest one (Fig.1D-F).

IP=527+532+640=1699

Leg setal formula

Leg I: Ta -1ω,1ε, 2ζ, 11B; Ti -1φ, 3k, 11B; Ge -, 2k, 6B ; Tfe -5B ; Bfe-2B; Tr- 1B ; Cx -1B

Leg II: Ta- 1ω ,1ε, 2ζ, 14B; Ti- 1φ, 3k , 8B; Ge - 2k, 4B; Tfe- 4B; Bfe – 2B; Tr- 1B, Cx- 1B.

Leg III: Ta -1ε, 1ζ,11B; Ti - 1φ, 1k,10B ; Ge -7B; Tfe -5B; Bfe – 2B; Tr – 1B; Cx – 1B.

Etymolog

Name of this new species is derived from the name of country from where the genus *Leptus* was collected first time.

Type

Holotype larva collected from 7/4L 5 km east of district Okara, Punjab, Pakistan on 05 – 08–05 (Muhammad Kamran) from *Aphis* spp. (Aphididae: Homoptera) infesting *Sorghum halepence* (baru grass). Paratypes 8 larvae, collection data of two paratypes same as holotype larva, while 4 paratypes larvae collected from University of Agriculture, Faisalabad also from *Aphis* spp. (Homoptera) infesting baru grass (*Sorghum halepence*) on 19–09–05 and two paratypes from 209/R.B., Faisalabad on 26-07-2006 from cotton plants (*Gossypium hirsutum*). All specimens have been deposited in Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad.

Remarks

This new species closely relates to *Leptus gauphalus* Haitlinger but both differ on the basis of following characters:

1. Both ASE and PSE ciliated on their entire lengths in this species but in *Leptus gauphalus*, both sensillae ciliated on distal halves of their length.
2. ISD = 42; GL=125; AW=62; PW=70 ASE=27 in this species but in *Leptus gauphalus*, ISD=66; GL=220; AW=96; PW=114; ASE=57.
3. fD=56; AP=12 in species but in *Leptus gauphalus*, fD=66; AP=18.
4. Tibia I 137µm in this species but in *Leptus*

gauphalus, tibia I 236µm.

5. Number setae and solenidion on leg segments differ in both the species.

It also resembles with *Leptus guus* Haitlinger due to presence of two palp genualae on palp genu, AP=12 and scutum in both finely punctate. But both differ on the basis of following main differences:

1. AL=PL in this species but in *Leptus guus*, AL>PL.
2. Both ASE and PSE ciliated on their entire lengths in this species but in *Leptus guus*, both sensillae ciliated on distal halves of their lengths.
3. GL=125; Hy=25; AW=62 in this species but in *Leptus guus*, GL=280; Hy=66; AW=124.
4. fD=56; fV=14 in this species but in *Leptus guus*, fD=140; fV=20.

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