

Two New Species of the Genus *Dactyloscirus* (Acari: Cunaxidae) from Punjab, Pakistan

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Abstract.- Adult females of two Cunaxid mites, *Dactyloscirus imbecillus* n.sp. and *Dactyloscirus manzoori* n.sp. are described and illustrated. Both were collected from leaf debris from Lodhran. The types have been deposited in the Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad.

Key words: Predatory mites, scale insect, scirus, cunaxid mites.

INTRODUCTION

Cunaxid mites are predators of scale insects, eriophyid and tetranychid mites, spring tails (Collembola) and other small arthropods (Smiley, 1992). Sellnick (1926) reported that *Dactyloscirus inermis* (Tragardh) feeds on collembolans, *Isotomatus palustris*. *Cunaxa capreolus* (Berlese) is found feeding on *Eutetranychus orientalis* (Klein) (Zaher *et al.*, 1975). Walter and Kaplan (1991) found *Coleoscyrus simplex* colonizing greenhouse pot cultures of root knot nematodes (*Meloidogyne* spp.) in Florida where it feeds on vermiform nematodes and other soil arthropods. Arbabi *et al.* (2002) reported the family Cunaxidae as an important predatory family from Sistan Baluchestan and Hormozgan provinces of Iran. Putatunda (2002) used the predatory mites to control phytophagous mites and reported that the mites of the family Cunaxidae are efficient predators of other harmful mites. Cunaxid mites were found to be very important predators of mites in ornamental plants in Haryana (Tagore and Putatunda, 2003).

Berlese (1916) reported the subgenus *Dactyloscirus* in the genus *Scirus* to accommodate his new species *Scirus (Dactyloscirus) eupaloides*. In 1941, Thor and Willmann elevated the status of the subgenus *Dactyloscirus* to genus designating *Scirus (Dactyloscirus) eupaloides* as its type species. Baker and Hoffmann (1948) considered

Dactyloscirus a senior synonym of *Cunaxa* Von Heyden, 1926. Smiley (1975) revised the family Cunaxidae, retaining *Dactyloscirus* as a genus and redescribed *D. eupaloides* (Berlese, 1916) and *D. machairodus* (Oudemans, 1922). A lot of taxonomic work on this genus has been done world over. From Pakistan only three species, *Dactyloscirus fixus* Chaudhri and Akbar, *Dactyloscirus ebrius* Chaudhri and *Dactyloscirus fuscus* Chaudhri have been reported earlier. In the present manuscript 2 new species have been described thus making 5 species of this genus from Pakistan. Key for all the known species in this genus from Pakistan is also prepared.

MATERIALS AND METHODS

Specimens of the genus *Dactyloscirus* were collected from leaf debris with the help of Berlese's funnel. The cunaxid mites from this collection were sorted out by using binocular microscope and preserved in small vials having 70% alcohol and few drops of glycerin. Permanent slides were prepared by using Hoyer's medium. The sketches of mounted specimens were prepared by using a phase contrast microscope and an ocular grid. The identification of the species was done with the help of the existing keys and literature. The setal nomenclature of Smiley (1992) has been followed. Measurements (in μm), ranges, means along with standard deviations and number of specimens is also given in the description. Following abbreviations have been used in this manuscript: asl, attenuate solenidion; bsl, blunt ended solenidion; sts, simple tactile setae; T, trichobothrium.

RESULTS

Key to species of genus *Dactyloscirus* from Pakistan

1. Palp genu with bulbous apophysis; dorsal hysterosoma without median shield 2
Palp genu without bulbous apophysis; dorsal hysterosoma with median shield 3
2. Venter with 12 simple setae between coxae II and distal part of body in addition to setae of anal and genital region; coxa IV with 2 setae *imbecillus*, n.sp.
Venter with 7 simple setae between coxae II and distal part of body in addition to setae of anal and genital region; coxa IV with 1 seta *manzoori*, n.sp.
3. Dorsal shield smooth; Palp genu with 3 spines
..... *fixus* Chaudhri and Akbar
Dorsal shield not smooth; Palp genu with less than 3 spines 4
4. Dorsal shield reticulated; Palp genu with a strong apophysis; genital suckers 2 pairs *ebrius* Chaudhri
Dorsal shield dotted; Palp genu without apophysis; genital suckers absent *fuscus* Chaudhri

1. *Dactyloscirus imbecillus*, new species (Fig. 1 A – F)

Female

Gnathosoma

Gnathosoma 362 μm long and 127 μm wide. Hypostome dotted, subrectangular and cone shaped, distally with almost parallel sides, with 4 pairs simple hypognathal setae (hg₁-hg₄) (Fig. 1-E).

Palp 5 segmented, measuring 270 μm , all segments dotted. Chaetotaxy of palp as follows, trochanter none; basifemur with one spine like seta; telofemur with one bulbous apophysis and one spine like seta; genu with one long elongate bulbous apophysis, 3 simple setae and 1 spine like seta; tibiotarsus terminating in a small claw, with 4 (1 long + 3 small) simple setae and one small spine like seta (Fig. 1-C).

Chelicerae 180 μm long, terminating in a claw, dorsal and ventral sides with lobes, with one dorsolateral simple seta (Fig. 1-D).

Dorsum

Body 558 μm long (without gnathosoma) and 382 μm wide. Propodosoma with reticulate subrectangular shield originating behind the base of gnathosoma and extending to the anterior region of hysterosoma. Propodosomal shield with anterior and

posterior sensillae PS₁ and PS₂ measuring 205 μm and 294 μm respectively and propodosomal setae P₁, P₂ both simple, 7.31 μm and 8.54 μm long respectively.

Hysterosoma separated from propodosoma by striae bearing dot like lobes. Hysterosoma with two reticulated lateral shields. Median shield absent. Setae L₁, D₁, D₂, D₃, D₄, D₅ present on dorsal hysterosomal membrane. Setae L₁ 9.75 μm , D₁ 9.75 μm , D₂ 12.19 μm , D₃ 12.19 μm , D₄ 12.19 μm and D₅ 14.63 μm long, all simple. Hysterosoma with one pair pores lateral to setae D₄ (Fig. 1-A).

Venter

Venter with dotted striations. Coxae I-II and coxae III-IV contiguous and reticulated. Hysterosoma with 7 simple setae between coxae II and distal part of the body in addition to setae of genital and anal region. Genital shield with two valves having random lobe like dots, each valve with 4 simple genital setae (g₁-g₄) not in a row and 2 genital suckers. Anal setae (a) 1 pair, para-anal setae (pa) 2 pairs. One pair minute pores near anal shield (Fig. 1-B).

Legs

Legs I-IV measuring (from trochanter base to the tip of tarsus) 470 μm , 431 μm , 443 μm and 402 μm respectively. All legs with dot like lobes, tarsi I-IV short, stubby and stout; terminating in large, conspicuous, lateral, bilobed flanges. Chaetotaxy of legs I-IV as follows, Coxae 3-3-3-1; trochanters 1-1-2-1; basifemora 5-5-3(1 asl + 2 sts)-2(1 asl + 1 sts); telofemora 5-5-4(1 asl + 3 sts)-4(1 asl + 3 sts); genua 8 (4 asl + 4 sts)- 7(4 asl + 3 sts)-6-7; tibiae 6(2 asl + 4 sts)-6(1 asl + 5 sts)-6(2 asl + 4 sts)-5(1 T + 4 sts) and tarsi 16(5 asl + 11 sts)- 14(2 asl + 1 bsl + 11 sts)-13(2 asl + 11 sts)-12(5 asl + 7 sts) (Fig. 1-F).

Male

Male specimens were not found in collection.

Type

Holotype female, collected from Kahrur Pakka (Lodhran) from leaf debris on 04-06-2004 (Hamid) and deposited in Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture Faisalabad, Pakistan.

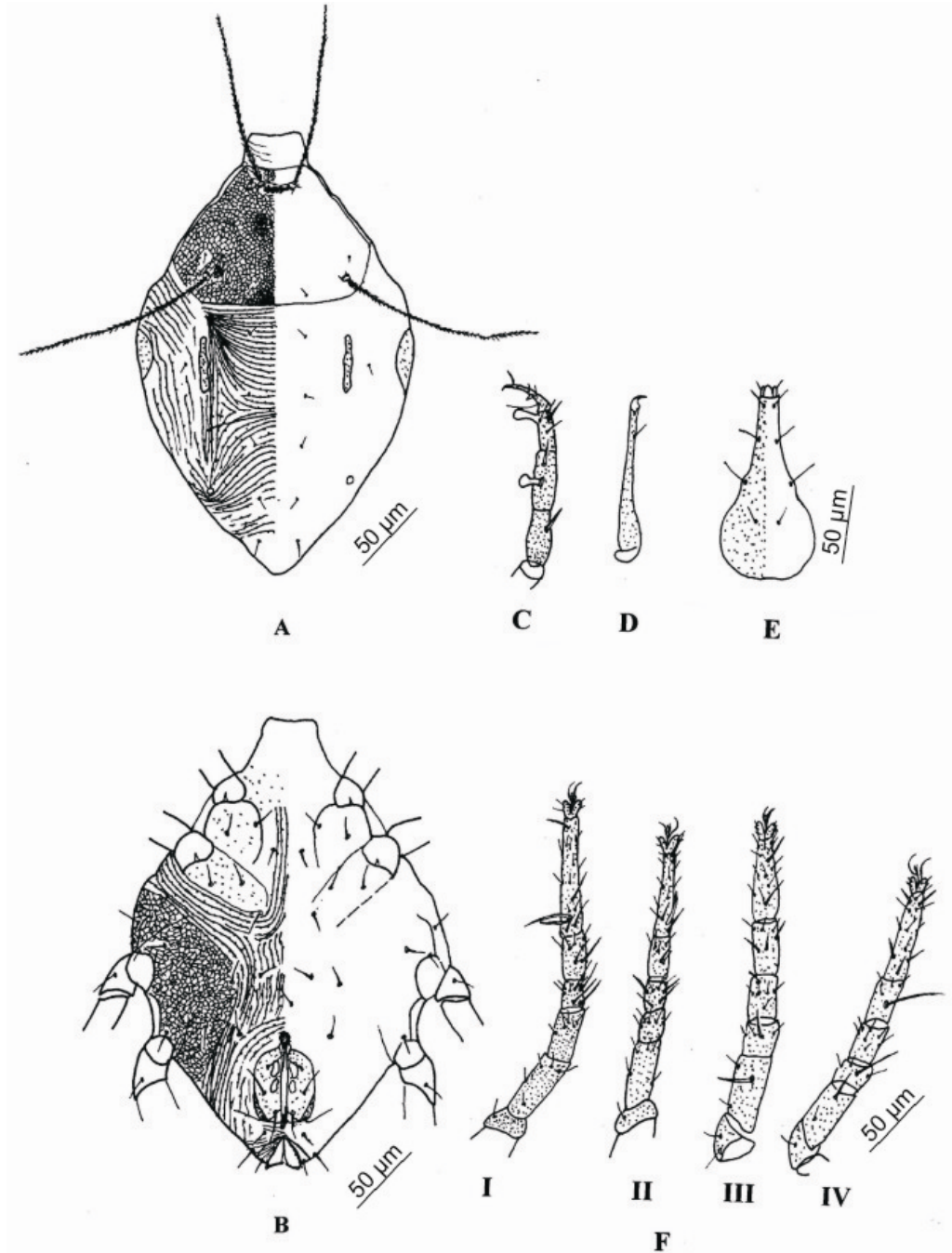


Fig. 1. *Dactyloscirus imbecillus*, new species, A, dorsal site; B, ventral site; C, palp; D, chelicera; E, hypostome; F, legs I-IV.

Etymology

This species epithet is derived from Latinized Greek word meant for feeble striations on the dorsum.

Remarks

This new species, *Dactyloscirus imbecillus* can be separated from *D. condylus* on account of following characters.

1. Palp ptefemur and genu with finger like apophyses in *D. condylus* while with bulbous apophyses in this new species.
2. Venter with 10 simple setae between coxae II and distal part of the body in addition to setae of anal and genital region in *D. condylus* as against 7 in this new species.
3. Both species differ in setal counts on the legs.

This new species *Dactyloscirus imbecillus* comes closer to *Dactyloscirus manzoori*, n. sp., due to different body characters but can be separated from them on the basis of following points:

1. Venter with 12 simple setae between coxae II and distal part of the body in addition to setae of anal and genital region in *Dactyloscirus manzoori* as against 7 in this new species.
2. Coxa IV with 2 setae in *Dactyloscirus manzoori* but with only one seta in this new species.
3. Palp genu with two simple setae in *Dactyloscirus manzoori* whereas with 3 simple setae in this new species.
4. Leg segments I-IV coxae and tibiae with 3-3-3-2 and 5-6-6-5 setae on tarsi are same hence not separating factor setae, in *Dactyloscirus manzoori* while 3-3-3-1 and 6-6-6-5 setae on these segments in this new species.

2. *Dactyloscirus manzoori*, new species (Fig. 2 A – F)

Female

Gnathosoma

Gnathosoma 343 μm long and 117.60 μm wide. Hypostome dotted, subrectangular and cone shaped, distally with almost parallel sides, with 4 pairs simple hypognathal setae (hg₁-hg₄) (Fig. 2-E).

Palp 5 segmented, measuring 300 μm ; all segments dotted. Chaetotaxy of palp as follows, trochanter none; basifemur with one spine like seta; telofemur with one bulbous apophysis and one spine like seta; genu with one elongate bulbous apophysis, 2 simple setae and 1 spine like seta; tibiotarsus terminating in a small claw, with 4 (1 large 3 small) simple setae, one thick stout spine like seta (Fig. 2C).

Chelicerae 190 μm long, terminating in a

claw, dorsal and ventral sides with lobes, with one dorsolateral simple seta (Fig. 2-D).

Dorsum

Body 597 μm long (without gnathosoma) and 421 μm wide. Propodosoma with subrectangular shield originating behind the base of gnathosoma and extending to the anterior region of hysterosoma. Propodosomal shield with anterior and posterior sensillae PS₁ and PS₂ measuring 205.80 μm and 264.60 μm respectively, propodosomal setae P₁, P₂ both simple 8.53 μm and 9.75 μm long respectively.

Hysterosoma separated from propodosoma by striae bearing dot like lobes. Hysterosoma with two reticulated lateral shields. Hysterosomal median shield absent. Setae L₁, D₁- D₅ present on dorsal hysterosomal membrane. Setae L₁ 9.75 μm , D₁ 13.41 μm , D₂ 13.41 μm , D₃ 15.85 μm , D₄ 19.51 μm and D₅ 20 μm long, all simple; hysterosoma with one pair pores lateral in position, between setae D₃ and D₄ (Fig. 2-A).

Venter

Venter with dotted striations. Coxae I-II and coxae III-IV contiguous and reticulated. Hysterosoma with 6 pairs of simple setae between coxae II and distal part of the body in addition to setae of genital and anal region. Genital shield with two valves having random lobe like dots, each valve with 4 simple genital setae (g₁-g₄) not in a row and 2 genital suckers. Anal setae (a) 1 pair; para-anal setae (pa) 2 pairs; one pair minute pores near anal shield (Fig. 2-B).

Legs

Legs I-IV measuring (from trochanter base to the tip of tarsus) 421 μm , 372 μm , 435 μm and 470 μm respectively. All legs with dot like lobes, tarsi I-IV short, stubby and robust; terminating in large, conspicuous, lateral, bilobed flanges. Chaetotaxy of legs I-IV as follows, Coxae 3-3-3-2; trochanters 1-1-2-1; basifemora 5-5(1 asl + 4 sts)-3(1 asl + 2 sts)-2(1 asl + 1 sts); telofemora 5-5-4(2 asl + 2 sts)-4(1 asl + 3 sts); genua 8(4 asl + 4 sts)-7(1 asl + 6 sts)-6(1 asl + 5 sts)-7(2 asl + 5 sts); tibiae 5(1 asl + 4 sts)-6(1 asl + 5 sts)-6(1 asl + 5 sts)-5(1 T + 4 sts) and tarsi 16(5 asl + 11 sts)-14(1 asl + 1 bsl + 12 sts)-13(1 asl + 12 sts)-12 (Fig. 2-F).

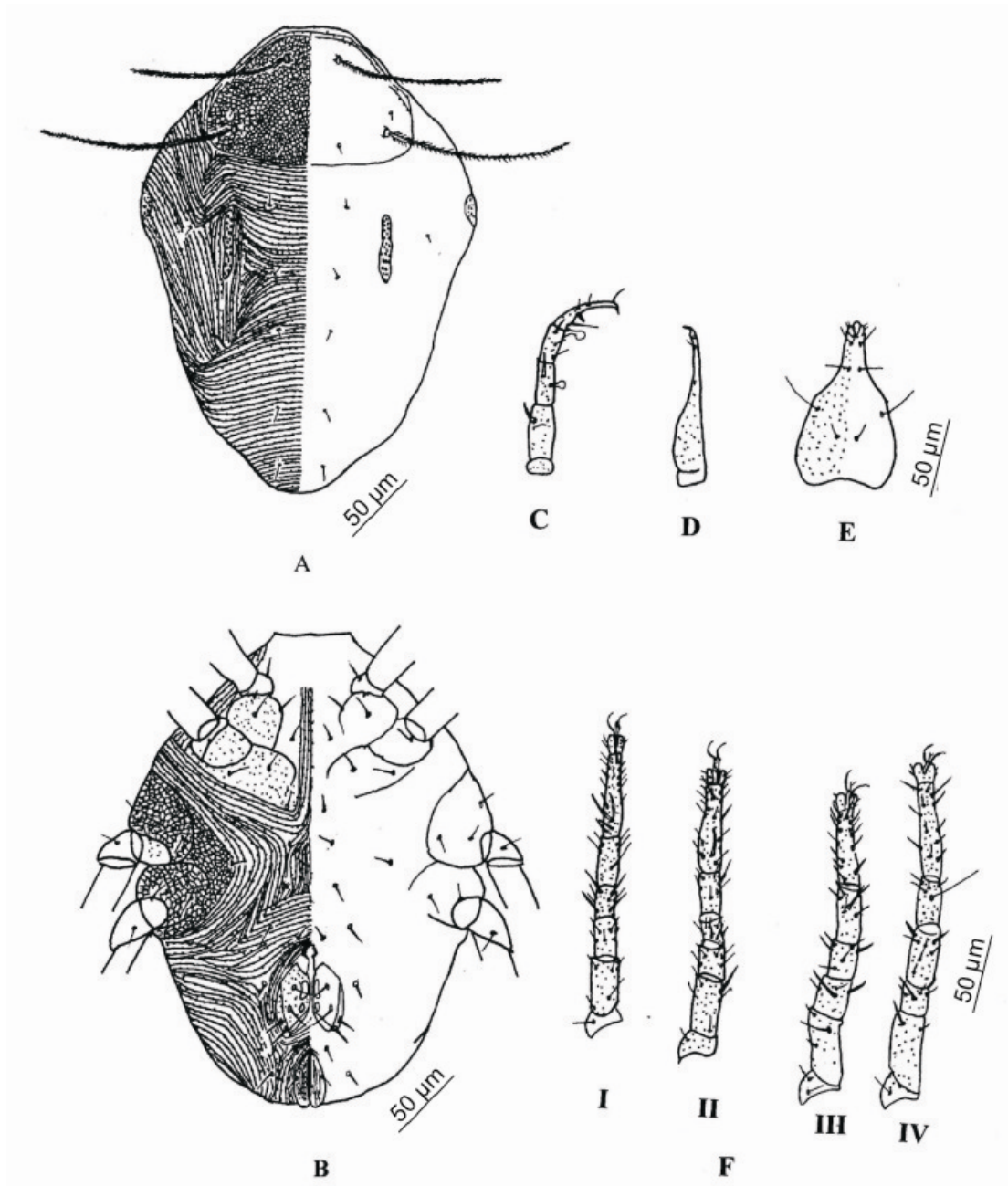


Fig. 2. *Dactyloscirus manzoori*, new species, A, dorsal site; B, ventral site; C, palp; D, chelicera; E, hypostome; F, legs I-IV.

Male

Male specimens were not found in collection.

Type

Holotype female, collected from Kahror

Pakka (Lodhran) from leaf debris on 20-07-2004 (Hamid) and deposited in Acarology Research Laboratory, Department of Agricultural Entomology, University of Agriculture, Faisalabad, Pakistan.

Etymology

This species is named in honour of Dr. Manzoor Ahmad, a senior Professor.

Remarks

This new species can be separated from *Dactyloscirus inermis* (Tragardh) on the basis of following points.

1. Palp genu with 3 simple setae in *Dactyloscirus inermis* whereas palp genu with 2 simple setae in this new species.
2. Venter with 5 pairs simple setae between coxae II and distal part of the body in addition to setae of anal and genital region in *Dactyloscirus inermis* as against 6 pairs in this new species.
3. Coxa IV with 3 setae in *Dactyloscirus inermis* while with 2 setae in this new species.
4. Chaetotaxy of legs I-IV in *Dactyloscirus inermis* is: genua 7-6-6-7; tibiae 6-6-6-5 and tarsi 22-20-20-20 while in this new species chaetotaxy of these segments is: 8-7-6-7; 5-6-6-5 and 16-14-13-12 respectively.

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