

## Record of One New Species of the Genus *Cunaxa* (Acari: Cunaxidae) From Rice Husk

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**Abstract.**- Mites belonging to the family Cunaxidae are well known predators of other phytophagous mites and small insects. One new species *Cunaxa nankanaensis* was recorded from Rice husk from a rice mill located in Nankana District. A key to all the known species from Pakistan of the genus *Cunaxa* is prepared to incorporate this new species. Types are deposited in the Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture, Faisalabad, Pakistan.

**Key words:** *Cunaxa*, Acari, Cunaxidae, rice husk.

### INTRODUCTION

The mites belonging to family Cunaxidae are very important predators of harmful mites and small insects of agricultural importance. Members of this family are reported world over. The family Cunaxidae was erected by Thor in 1902. The genus *Cunaxa* is the largest genus of this family, comprising over 50 known species. Some species like *Cunaxa capreolus* are cosmopolitan, but others have a more restricted distribution. The genus *Cunaxa* was erected by Von Heyden in 1826, who designated *Scirus setirostris* Hermann as the type species. A lot of taxonomic work has been done all over the world on this genus, as summarized by Smiley (1992) and with additions by Chinniah and Mohanasundaram (2001), Corpuz-Raros and Garcia (1995), Gupta (1991, 1992), Gupta and Paul (1985), Khaustov and Kuznetsov (1998), Muhammad *et al.* (1989), Sergeyenko (2004), Sionti and Papadoulis (2003). Bashir and Afzal (2006) and Bashir *et al.* (2010). den Heyer (1979) created a new genus *Rubroscirus* on the basis of having a single seta (instead of two) on coxa IV and reticulated dorsal shields, along with other characters. Smiley (1992), however, did not follow this creation, considering

these characters of specific level. Thus, he synonymised *Rubroscirus* with *Cunaxa*. Bashir and Afzal (2006) and Bashir *et al.* (2010) agreed with Smiley (1992) and shifted already known species *R. valentis* Muhammad, Chaudhri and Akbar, 1989, *R. rasile* Muhammad and Chaudhri, 1993, and *R. otiosus* Muhammad and Chaudhri, 1993, previously collected from Pakistan. The present authors agree with these workers and consider *Rubroscirus* as junior synonym of *Cunaxa*. In the present research paper, the authors have described one new species of the genus *Cunaxa*, thus making a total of 10 species of this genus from Pakistan.

### MATERIALS AND METHODS

During a survey of different climatic regions of Punjab-Pakistan, one new species of *Cunaxa* was collected from Rice husk. For extraction of mites, the samples of leaf debris, rice husk and other materials which could not be processed at the spot were brought to laboratory and processed through Berlese's funnels for at least 24 hours. The mites, thus collected in a beaker containing 50% alcohol, were then sorted under a binocular microscope and cunaxid mites were preserved in small vials of 70% alcohol and a few drops of glycerin. Permanent slides were prepared using Hoyer's medium. The mounted specimens were identified using a phase contrast microscope and the illustrations prepared by using an ocular grid. The new species was distinguished as different with the help of existing

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keys and literature of Chaudhri (1977), Smiley (1992), Muhammad and Chaudhri (1993), Bashir *et al.* (2005, 2010), and Bashir and Afzal (2006). The setal nomenclature of Smiley (1992) has been followed. All measurements are given in  $\mu\text{m}$ , with the measurement of the holotype first and the range following in brackets. The following abbreviations are used: asl, attenuate solenidion; bsl, blunt ended solenidion; sts, simple tactile setae; T, trichobothrium.

**KEY TO ALL THE KNOWN SPECIES OF GENUS  
CUNAXA FROM PAKISTAN**

- 1) Hysterosomal shield present..... 2  
Hysterosomal shield absent..... 7
- 2) Setae D<sub>1</sub>-D<sub>3</sub> simple ..... 3  
Setae D<sub>1</sub>-D<sub>3</sub> spiculate ..... *doxa* Chaudhri
- 3) Venter with 4 pairs simple setae between coxae II and distal part of the body in addition to setae of anal and genital region; setae D<sub>4</sub> and D<sub>5</sub> spiculate ..... 4  
Venter with more than 4 pairs simple setae between coxae II and distal part of the body in addition to setae of anal and genital region; setae D<sub>4</sub> and D<sub>5</sub> simple ..... 6
- 4) Setae D<sub>1</sub> present on hysterosomal shield ..... 5  
Setae D<sub>1</sub> not present on hysterosomal shield .....  
..... *nankanaensis*, n.sp
- 5) Setae D<sub>4</sub> extending beyond the base of seate D<sub>5</sub>; tibia III with 5 setae .....  
..... *leuros*, Bashir, Afzal, Ashfaq, Akbar and Ali  
Setae D<sub>4</sub> not extending beyond the base of seate D<sub>5</sub>; tibia III with 6 setae .....  
..... *rafiqi*, Bashir, Afzal, Ashfaq, Akbar and Ali
- 6) Seta D<sub>1</sub> 2.5 times longer than setae D<sub>2</sub> and D<sub>3</sub>; venter with 5 pairs of simple setae between coxae II and distal part of the body in addition to seta of anal and genital region .....  
..... *jatoiensis*, Bashir & Afzal  
Seta D<sub>1</sub> of almost same length as of setae D<sub>2</sub> and D<sub>3</sub>; venter with 6 pairs of simple setae between coxae II and distal part of the body in addition to setae of anal and genital region ..... *capreolus* (Berlese)
- 7) Setae D<sub>1</sub>-D<sub>5</sub> simple..... *reticulatus* Bashir & Afzal  
Setae D<sub>1</sub>-D<sub>5</sub> spiculate ..... 8
- 8) Leg tibia II-IV with 5-5-5 setae ..... *valentis* (Muhammad, Chaudhri & Akbar)  
Leg tibia II-IV not with 5-5-5 setae..... 9
- 9) Genu II and tibia I each with 7 setae .....  
..... *resile* (Muhammad & Chaudhri)  
Genu II and tibia I each with 9 setae .....  
..... *otiosus* (Muhammad & Chaudhri)

***Cunaxa nankanaensis*, new species**

(Fig. 1A–F)

*Female*

*Gnathosoma*

Gnathosoma 200 long and 80 wide. Hypostome subrectangular in shape and cone shaped distally; with 4 pairs simple hypognathal setae (hg<sub>1</sub>-hg<sub>4</sub>) and 2 pairs adoral setae; with dot like lobes (Fig. 1E).

Palp 5 segmented; measuring 138, dotted. Chaetotaxy of palp as follows: trochanter none; basifemur with one simple seta; telofemur with one uncinat apophysis and one simple seta; genu with one spine like seta and two simple setae; tibiotarsus with 4 simple setae, one thick spine like seta and terminating in a small claw (Fig. 1C).

Chelicerae 125  $\mu\text{m}$  long, terminating in a claw; dorsal and ventral sides with lobes; with one dorsolateral simple seta (Fig. 1D).

*Dorsum*

Body 290 long (without gnathosoma) and 190 wide. Propodosoma with subrectangular shield, originating behind the base of gnathosoma and extending to the anterior region of hysterosoma.

Propodosomal shield smooth, with anterior and posterior sensillae PS<sub>1</sub>, PS<sub>2</sub> measuring 170, 230 respectively and propodosomal setae P<sub>1</sub>, P<sub>2</sub> both simple 9, 11 long, respectively.

Hysterosoma separated from propodosoma by smooth striae, hysterosoma with a subrectangular median shield complemented with setae D<sub>2</sub> measuring 12, D<sub>3</sub> 12, D<sub>4</sub> 20 and L<sub>1</sub> 11. Seta D<sub>1</sub> 11 and seta D<sub>5</sub> 22 long are not located on the hysterosomal shield. Setae D<sub>1</sub>, D<sub>2</sub>, D<sub>3</sub> and L<sub>1</sub> simple while seta D<sub>4</sub> and D<sub>5</sub> spiculate. Hysterosoma with 1 pair pores lateral in position between setae D<sub>3</sub> and D<sub>4</sub> on hysterosomal shield. Seta D<sub>4</sub> not extending beyond the base of seta D<sub>5</sub> (Fig. 1A).

*Venter*

Venter with smooth striations. Coxae I-II and coxae III-IV contiguous. Hysterosoma with 4 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, each valve with 4 simple genital setae (g<sub>1</sub>-g<sub>4</sub>) in a row. Anal

setae (a) and para-anal setae (pa) 1 pair each. One pair minute pores near anal shield (Fig. 1B).

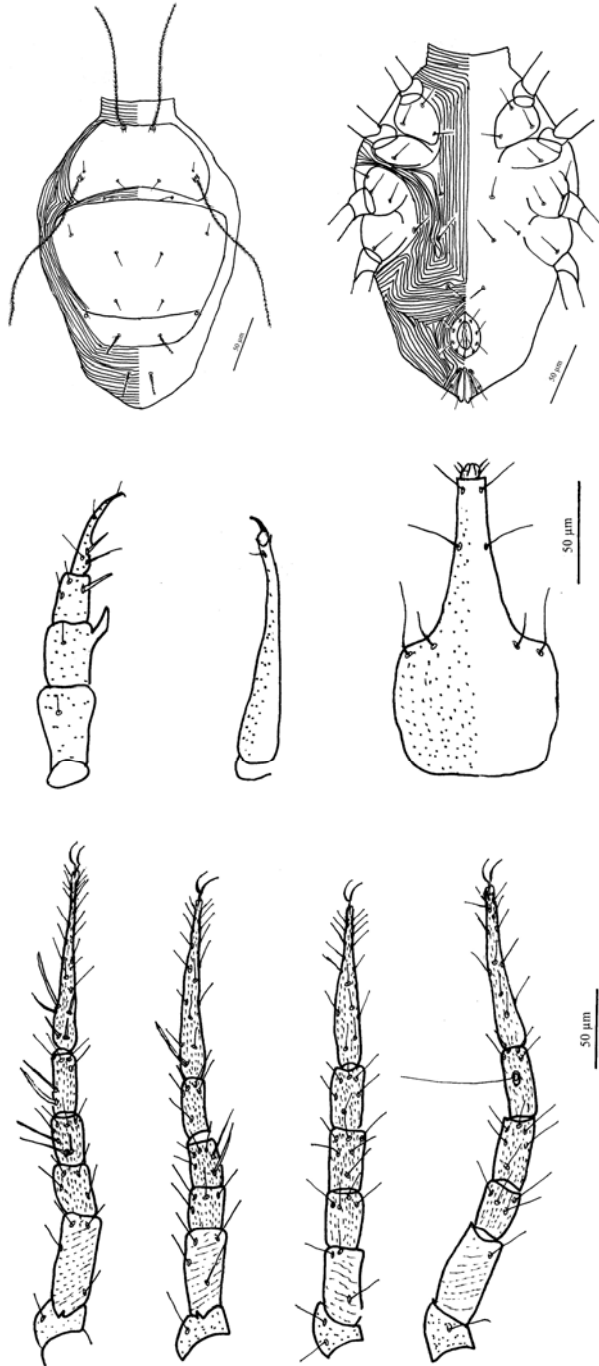


Fig.1 *Cunaxa nankanaesis*, n. sp. A, dorsal side; B, ventral side; C, palp; D, chelicera; E, hypostome; F, legs I-IV.

### Legs

Legs I-IV measuring (from trochanter base to the tip of tarsus) 270, 250, 270 and 320 respectively. All legs with dot like lobes, tarsi I-IV long, slender and attenuate, terminating with small lateral bilobed flanges. Chaetotaxy of legs I-IV as follows: Coxae 3-1-3-1; trochanters 1-1-2-1; basifemora 4-4-3-1; telofemora 4-4-4-4; genua 7(3 asl + 4 sts)-6(2 asl + 4 sts)-6-6; tibiae 6(2 asl + 4 sts)-5-6-5(1 T + 4 sts) and tarsi 23(5 asl + 18 sts)-17(1 asl + 16 sts)-16-12 (Fig. 1F).

### Male

Not known.

### Type

Holotype female, collected Nankana (Sheikhupura) from rice husk on 03-08-2004 (Hamid). The specimen has been deposited in Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture Faisalabad, Pakistan.

### Etymology

This species epithet is in reference to geographical location of type.

### Remarks

This new species can also be separated from *Cunaxa carina* Den Heyer due to following characters:

1. Hysterosomal shield with setae  $D_1$ - $D_2$  and  $L_1$  is *Cunaxa carina* but in this new species hysterosomal shield with setae  $D_2$ ,  $D_3$  and  $D_4$  along with  $L_1$ .
2. In *Cunaxa carina* venter with 5 pairs of simple setae between coxae II and distal part of the body is addition to setae of anal and genital region as against 4 pairs in this new species.
3. Chaetotaxy of legs I-IV excluding trochanters and femora in *Cunaxa carina* as follows: coxae 3-1-2-2; genua 9-7-9-6; tibiae 7-6-6-5 and tarsi 30-25-23-19, while in this new species as follows: Coxae 3-1-3-1; genua 7-6-6-6; tibiae 6-5-6-5 and tarsi 23-17-16-12.

This new species is closely related to *Cunaxa*

*thessalica* Sionti and Papadoulis but can be separated from it due to following characters.

1. Palp telofemur with a finger like apophysis in *C. thessalica* while with an uncinat apophysis in this new species.
2. Hysterosomal shield with setae  $D_1 - D_3$  in *C. thessalica* while with  $D_2 - D_4$  in this new species.
3. Both species differ in setal counts on leg.

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