

TWO NEW SPECIES OF CUNAXID MITES ON COTTON AND CASTOR PLANTS FROM EGYPT (ACTINEDIDA: CUNAXIDAE)

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Abstract

Survey of different predaceous mites on cotton and castor plants at Qalubiya governorate revealed that the presence of two new species *Coleoserius zaherii* Fawzy and Khalil sp.n. and *Neocunaxoides metwealyii* Fawzy and Khalil sp.n. (Family : Cunaxidae). They were classified taxonomically described morphologically and illustrated.

INTRODUCTION

Members of the sub-order Actinedida (Prostigmata) such as families Cunaxidae, Cheyletidae, Stigmaeidae and Bdellidae are important predators for their wide distribution and attacking several important agricultural pests (Zaher, 1986).

Several species were reported to feed on some harmful insects, mites and nematodes as aerial and soil predators (Soliman, 1987).

Smiley (1975) revised the generic classification of family Cunaxidae and established four new genera *Parabonzia*, *Pseudoponzia*, *Neocunaxoides* and *Pseudocunaxa*, (=Coleoscirus) based on palpal morphology. The number of segments, types of setae, location of dorsal shield setae and tarsal flanges used.

Den Heyer (1979a) described several new African cunaxid species. He (1979b, c & d) created the two new genera *Rubroscirus* and *Plulaeus* and the new subfamily Coleoscrinae with the characteristics of the genus *Coleoscirus*. A key to the genera of the subfamily is given.

In Egypt, Zaher (1986) survey seven cunaxid species of four genera inhabiting plants and soil.

Other few taxonomical, ecological and biological studies were undertaken, Nassar (1976); El-Khateeb, Hanaa (1998); El-Bishlawy (1979) and Khalil (2000).

Therefore, the present work records two new species of the family Cunaxidae found on cotton and castor plants at Qalubiya governorate, Egypt. These species are described and illustrated.

MATERIALS AND METHODS

Samples of cotton and castor plant leaves were collected from Qalubiya governorate and collected cunaxid mite were cleared in Nesbitt's fluid and mounted on glass slides in Hoyer's media and classified according to Smiley (1975). Theses two species were drawn and described morphologically.

RESULTS AND DISCUSSION

***COLEOSERIUS ZAHERII* SP.N.**

Female (Figs 1&2)

This species is related to *Coleoscirus coatesi* (Den Heyer) but differs in; dorsal shield longer than that of *C. coatesi* and its posterior margin concave, while convex in *C. coatesi*.

Body oval, relatively large, 350-395 μm long; 220-227 μm wide.

Dorsum (Fig. 1-A)

The anterior margin of dorsal shield (Fig. 1a) nearly wide W shaped, ps1 setae in front, while in *C. coatesi*, the anterior margin truncate; dorsal shield covered with small papillae. Chelicerae (Fig. 2b) broad at base and attenuated apically, its length 196 μm with a large curved claw at apex and with a simple seta near anterior. Palp (Fig. 2c) with five segments, 200 μm long and strong, its femur enlarged with one pair of setae and some reticulation, genu with one pair of setae, while in *C. coatesi* with three pairs of setae. Tibiotarsus with long simple setae on its basal third, a small apophysis and three simple setae near apex.

Idiosoma with large dorsal plate truncated posteriorly covers the propodosoma and hysterosoma. It punctuated with two lobes around the anterior and posterior sensillae ps1, ps2; four pairs of small simple dorsal setae dc₁-dc₄ on dorsal shield, while dc₅, dc₆ on the scutal membrane; lateral setae dl₁ located on the anterior part of the dorsal shield, while dl₂ situated between ps₂; the third lateral setae dl₃ on the transversal line with the dorsal seta-dc₁ the two lateral setae dl₅, dl₆ on the scutal membrane (Fig. 1a) located at the posterior end of the body.

Ventrum (Fig. 1b)

Anterior portion of the ventrum coalesced with coxae I & II forming a strong punctuated, truncated sternal plate. This plate supplied with three pairs of simple ventral setae; a punctuated ridge between the sternal and hysterosomal regions. Coxae III & IV fused forming an elongate lateral coxal plate, punctuated and supplied with two pairs of ventral simple setae. Hysterosoma and genital region surrounded by rounded broken striations. Five pairs of ventral simple setae of which three pairs located anterior of genital in middle, while the other two pairs situated around genital region laterally. Genital plate covered with two genital flaps, each with five pairs of simple genital setae the anterior setae longer than the posterior. There are also two pairs of oval genital suckers on genitalia. The anal opening directly located posterior of genital region and has three pairs of setae, two pairs ventrally and the third pair of anal setae dorsally.

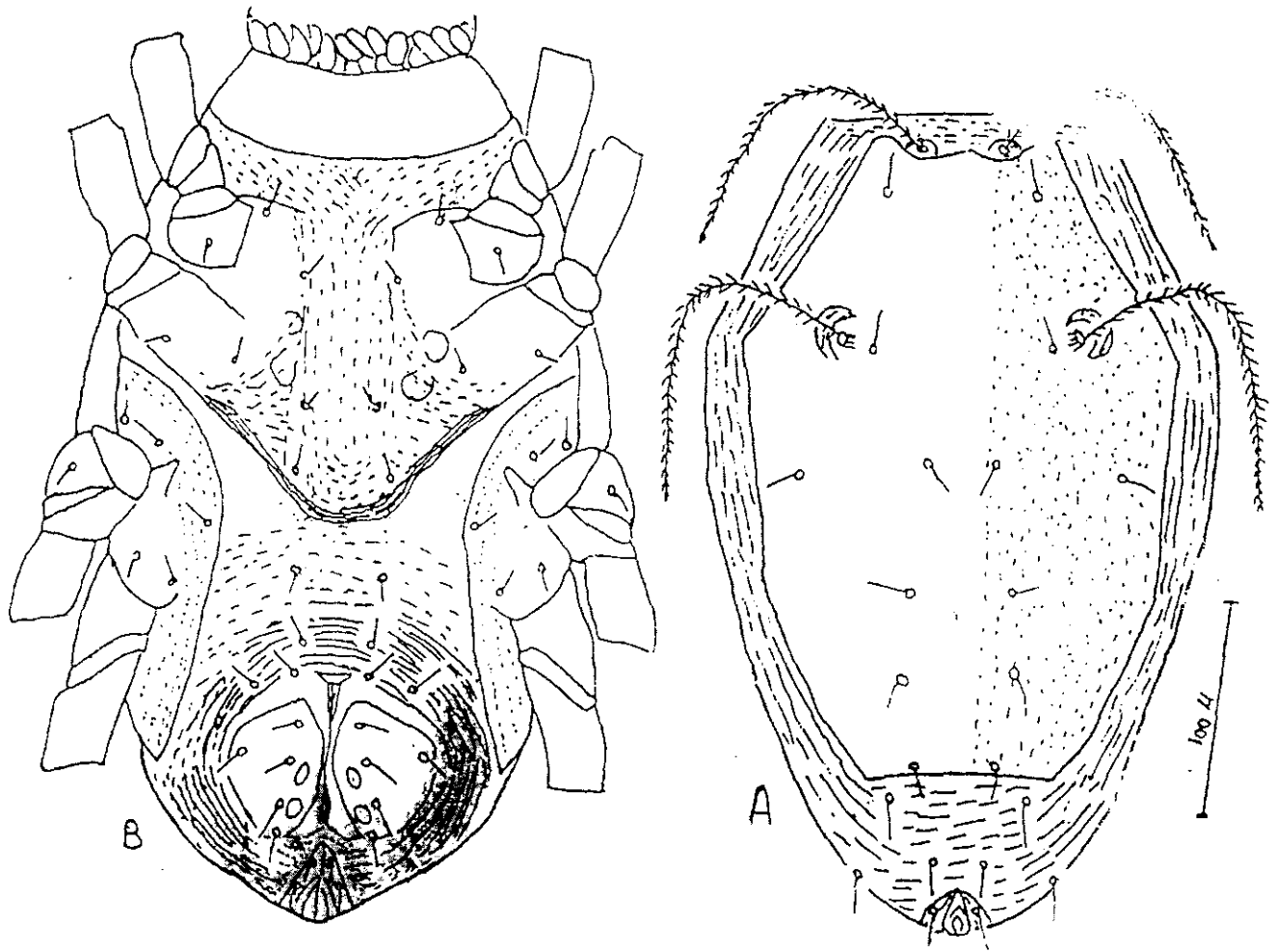


Fig.1. Adult female of *Coleoserius zaheerii* Fawzy and Khalil sp.n.

A- Dorsum

B- Ventrum

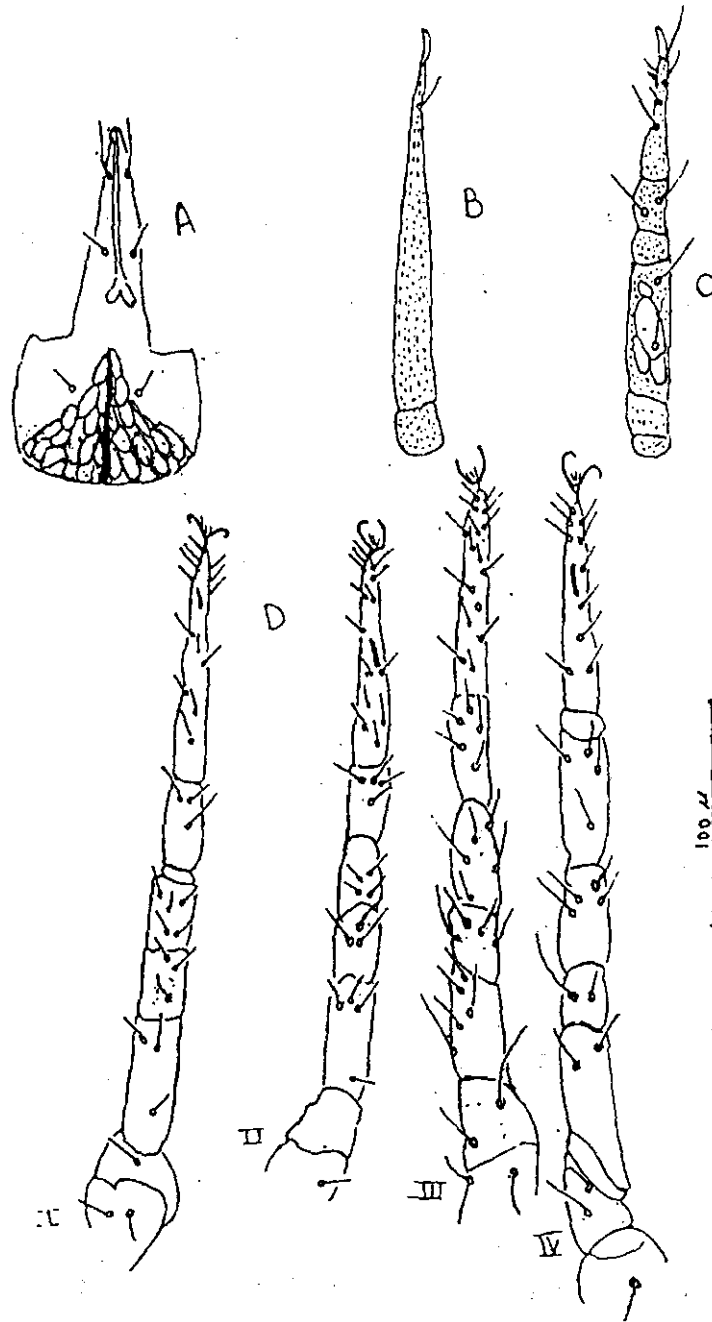


Fig. 2. Adult female of *Coleoserius zaherii* sp.n. A- Hypostome B- Chelecera
C- Pedipalp D- Legs I-IV

Legs (Fig. 2d): I-IV nearly equal in length; 331, 300, 311 and 311 μ , respectively; Chaetotaxy: Coxae : 3-1-4-1, trochanter : 3, 4, 5, 2. Basifemur : 5-4-5-4, telofemur : 3-1-2-1. Genue: 5-4-5-4, tibiae: 3-3, solinidion -4-3 tarsi. 14-15-16-11.

Male (Fig. 3&4): Idiosoma : 280 μ m long; 184.4 μ m wide; length of hypognathum 166.6 μ m; of palp 150 μ m; chelicerae 146.6 μ m.

Dorsum: Resembles that of the female with the following differences (Fig. 3a); setae dc_5 and dl_6 of each side located on a longitudinal transversal platelet; three small platelets beside the posterior part of dorsal shield; also, there are two pairs of plates beside the transversal plate, the anterior pair small dl_6 , dc_6 located at the posterior end of idiosoma beside anal opening.

Ventum: Differs from that of the female in several aspects (Fig. 3b); subcuticular sculpturings occur on the sternal and hysterosomal coxal plates (Fig. 4c) but not on the genital valves. Hypogastral setae carried on the integument; genital valves flaked the genital parts.

Gnathosoma: The hypognathum approximately 1.5 times longer than broad. The ventral surface of coxal part provided with triangular shape of rounded reticulations behind hg_3 setae; Hypostom half of the hypognathum length, its tip with the hg_1 setae, while its end surrounded by the hg_2 setae.

Legs (Fig. 4d): I-IV nearly equal in length; 331, 300, 311 and 311 μ , respectively; chaetotaxy-coxae : 3-1-4-1, trochanter : 3, 4, 5, 2; basifemur : 5-4-5-4, telofemur : 3-1-2-1; genue: 5-4-5-4, tibiae: 3-3, solinidion -4-3 tarsi. 18-17-17-17.

Type material: Three holotype females and one allotype male; paratypes, 12 females and six males; all kept in the Acari Collection of Plant Protection Research Institute, Dokki, Giza, Egypt.

***Neocunaxoides maetwalyii* sp.n.**

This species resembles *Neocunaxoides trepidus* (Kuznetzo & Livshitz), but differs in genital plate with four pairs of setae only, hystergastral setae six pairs while four pairs in *N. trepidus*.

Female (Fig. 5&6): Idiosoma 289 μ m long; 201 μ m wide; hypognathosoma 133 μ m long; palp 90 μ m; chelicerae 122 μ m.

Dorsum: Idiosoma covered with one sclerotized dorsal plate (Fig. 5a); 200 μ m long; 134 μ m wide; its posterior and anterior truncated cover the propodosoma and hysterosoma, mainly smooth but a band of lobes around ps_2 with punctuated area located anteriorly. Anterior portion of shield with two pairs of fine branched sensory setae and two pairs of simple setae, ps_1 , ps_2 , dl_1 , dc_1 ; posterior portion of dorsal shield with 3 pairs of dorsocentral setae dc_2 - dc_4 and one pair of lateral setae dl_2 , all the setae simple, hysterosoma carries 3 pairs of simple setae dc_5 , dc_6 and dl_6 .

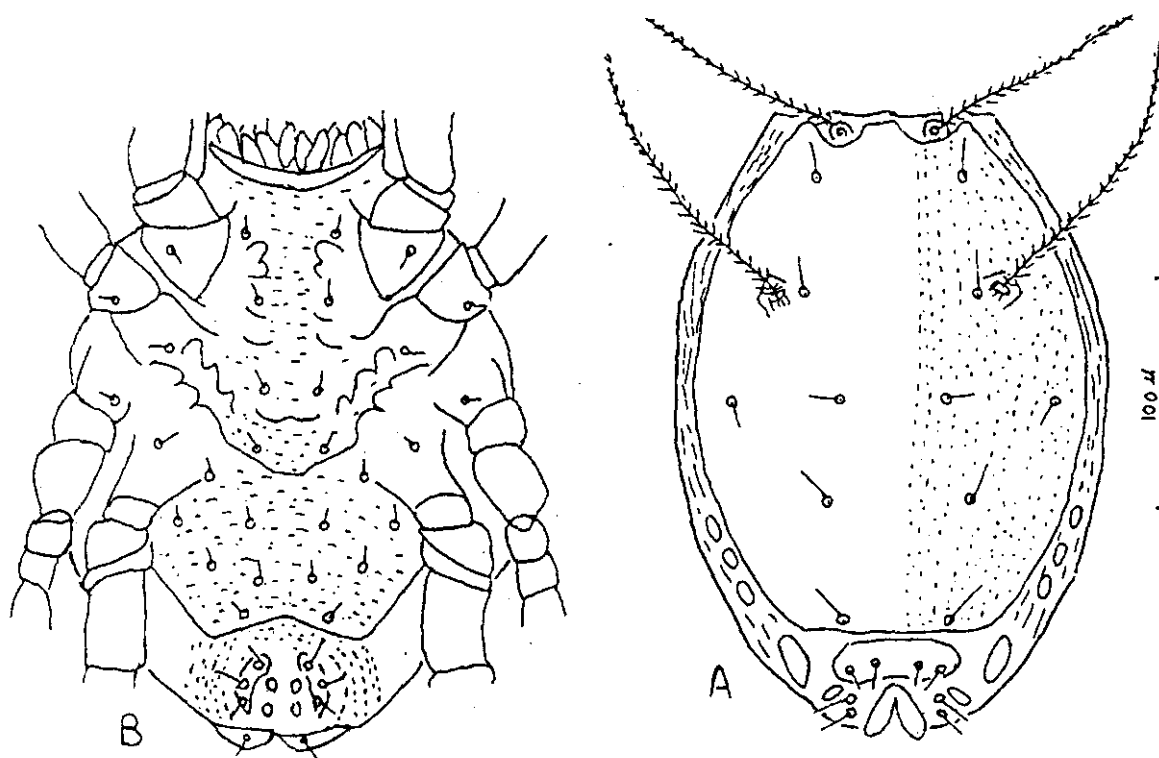


Fig.3. Adult male of *Coleoserius zaherii* Fawzy and Khalil sp.n.

A- Dorsum

B- Ventrum

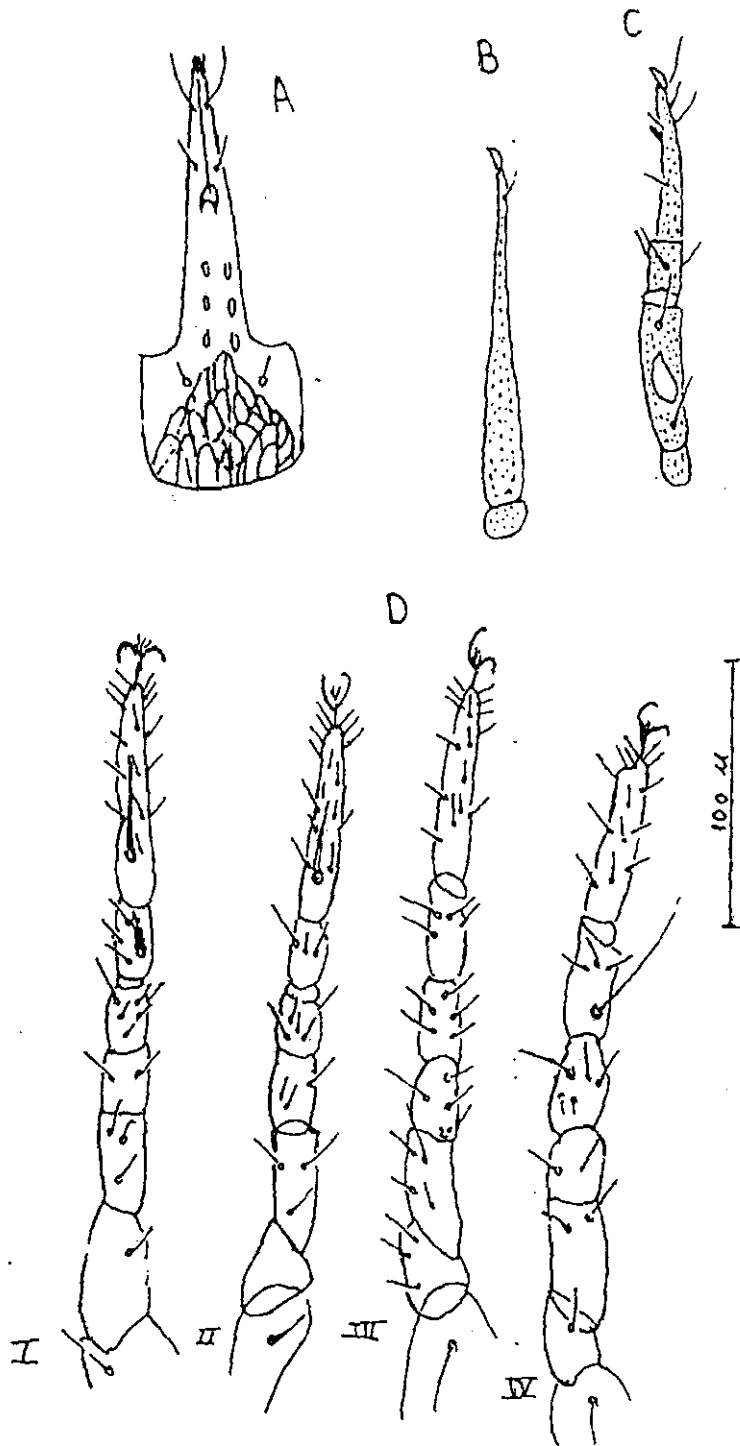


Fig. 4. Adult male of *Coleoserius zaherii* sp.n.
 A- Hypostome B- Chelelcer C- Pedipalp D- Legs I-IV

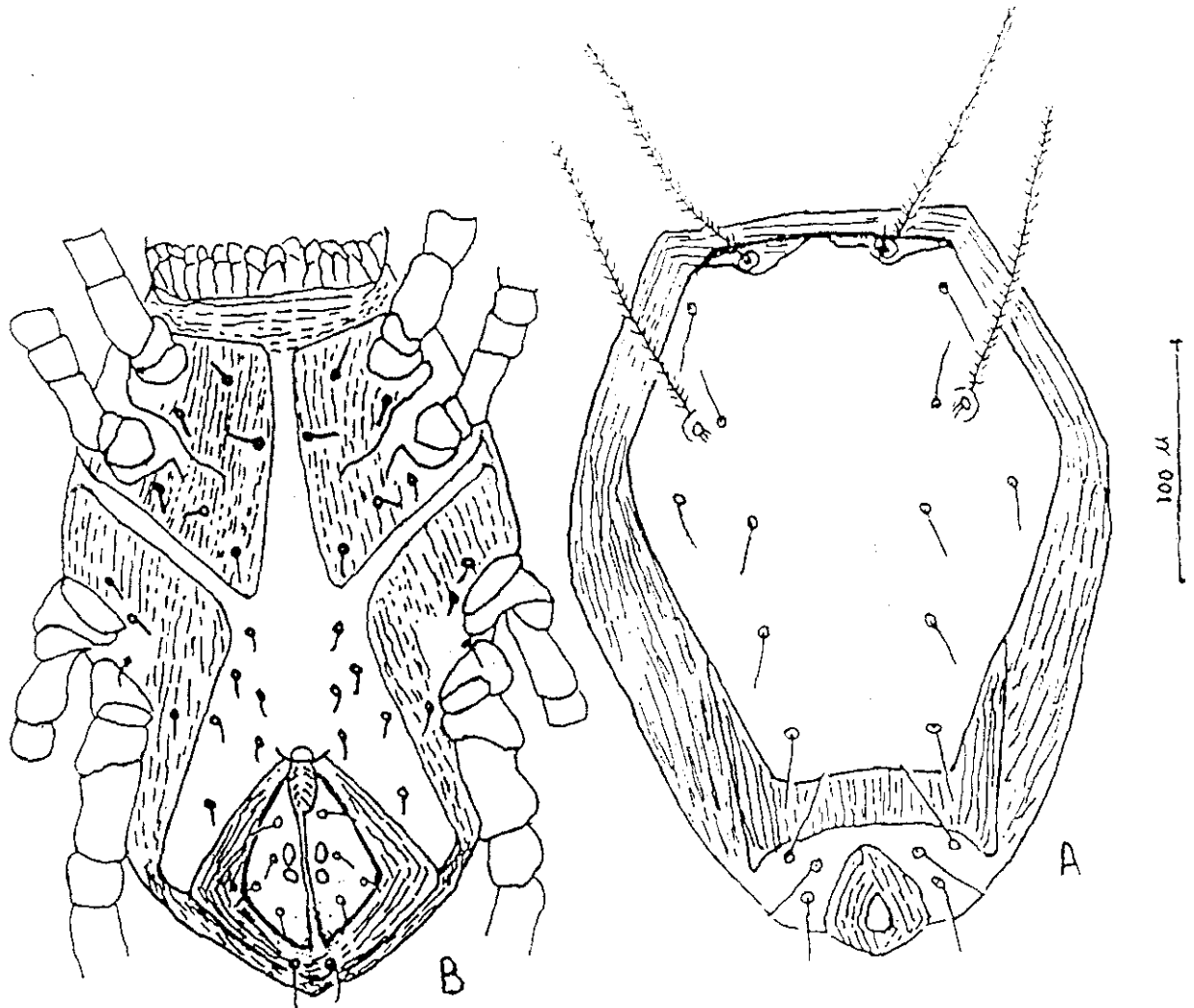


Fig.5. Adult female of *Neocunaxoides metwalyii* Fawzy and Khalil sp.n.

A- Dorsum

B- Ventrum

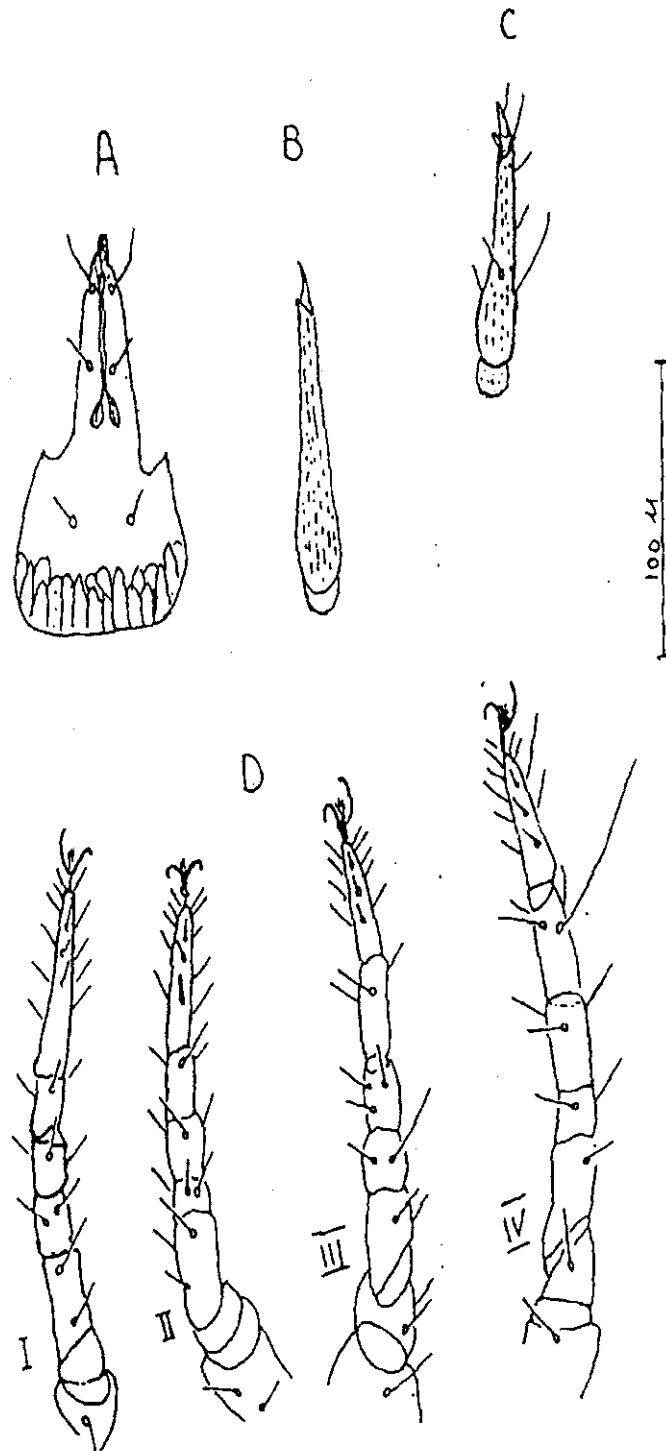


Fig. 6. Adult female of *Neocunaxoides metwalyii* sp.n.
A- Hypostome B- Chelecera C- Pedipalp D- Legs I-IV

Palps three segments; trochanter without setae; femur with one setae; tibiotarsus with two lateral setae in outside and one seta inner lateral and central setae; two setae on its tip; a big claw and a tooth projection.

Anal opening at the posterior and of the idiosoma.

Ventrum: Anterior portein of the idiosoma divided medially forming two distinct plats with coxae I-IV, coxae III-IV coalesced, anterior plate with fine posterior projection. The two plates are forming two separated strong elongate lateral plates. The antero-ventral plates with six pairs of small simple setae. Lateral ventral plate of coxae III & IV each with three pairs of simple setae. There are six pairs of simple, hystergasteral setae (Fig. 4b). The genital opening surrounded by two valves, each carries 4 pairs of simple setae and a pair of genital discs. There is one pair of anal setae posterior to genitalia.

Gnathosoma: (fig .5a) Gnathosoma is longer than broad with smooth ventral surface except its basal, which is reticulate and there are three pairs of round reticulation anterior its base.

Ventral surface of hyposotme (Fig. 5a) bearing three pairs of hg-setae; the first pair on its tip longer than other setae; thired pair on subcaptium. The palps (Fig. 6c) with length 150 μm . trochanter (segment) lack setae femur with 2 setae, genu with three simple setae-tibio tarsus with five setae and spine setae. There is a claw at the tip of tibiotarsus. Chelicera (Fig. 5b) with length 146 μm , fixed digit with simple setae, movable setae as a claw.

Legs: (fig. 6d): I-II nearly equal in leugth; Its length, (Fig. 5d) I 284 μm , II 266 μm , III 288 μm , and IV 277.7 μm ., respectively

Chaetotaxy of: Coxae : I-IV, 1-2-1-1, trochanters I-IV, 2-3-2-1, femora I-IV, 4, 6,4,3; genua I-IV, 3-3-3-3, tibia I-IV, 3-3-3-3, tarsis, 15-11-12-13.

Male (Fig. 7&8): Dimension : Idiosoma : length 280 μm , width 184.4 μm length of hypognathum 166.6 μm , length of palp (Fig. 8c) 150 μm , length of chelicerae (Fig. 8b) 146.6 μm ,

Dorsum: resembles that of the female (Fig. 7a) with the following differences. Setae dc_5 and dl_5 of each side borne on a longitudinal transversal platelet; three small platelets beside the posterior part of dorsal shield, two pairs of plates beside the transversal plate, which mentioned before, the anterior pair oval shape and big, while the posterior pairs is smal dl_6 , dc_6 located at the posterior end of idiosoma beside and opening.

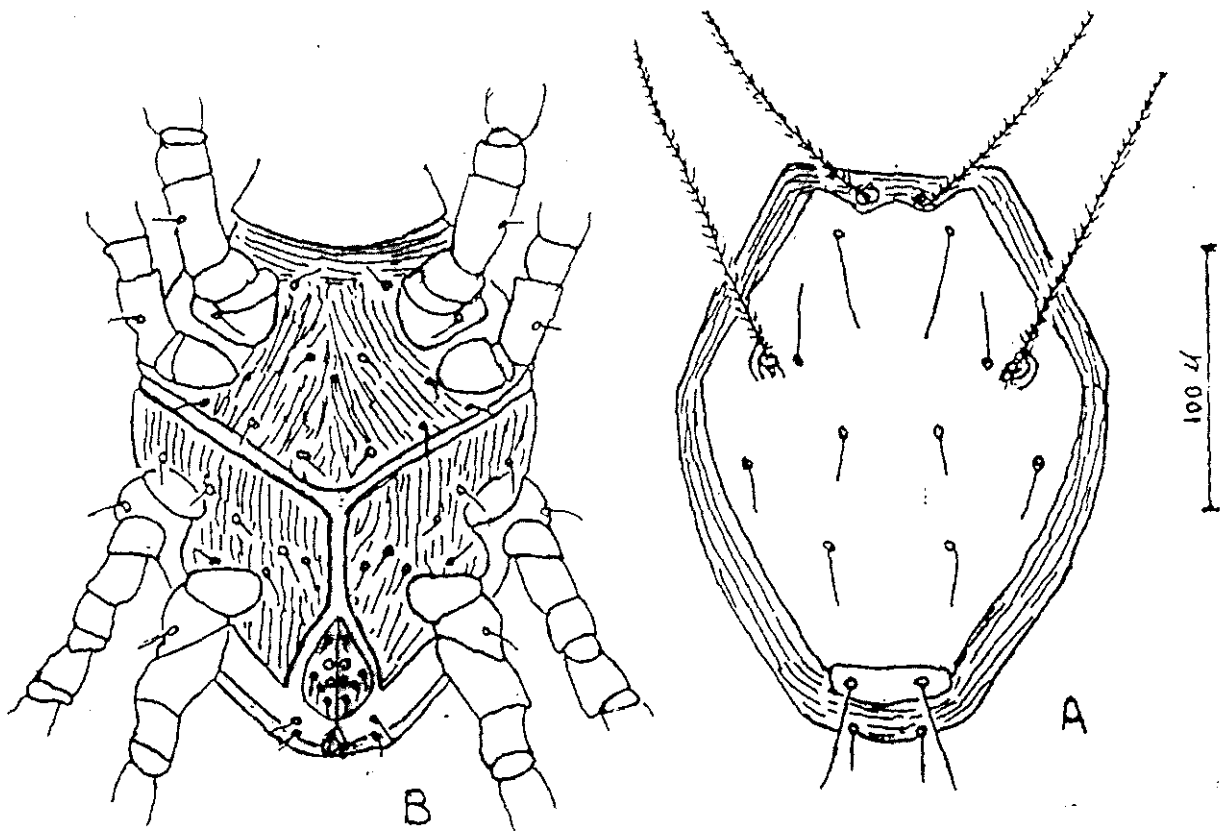


Fig. 7. Adult male of *Neocunaxoides metwalyii* Fawzy and Khalil sp.n
A- Dorsum B- Ventrum

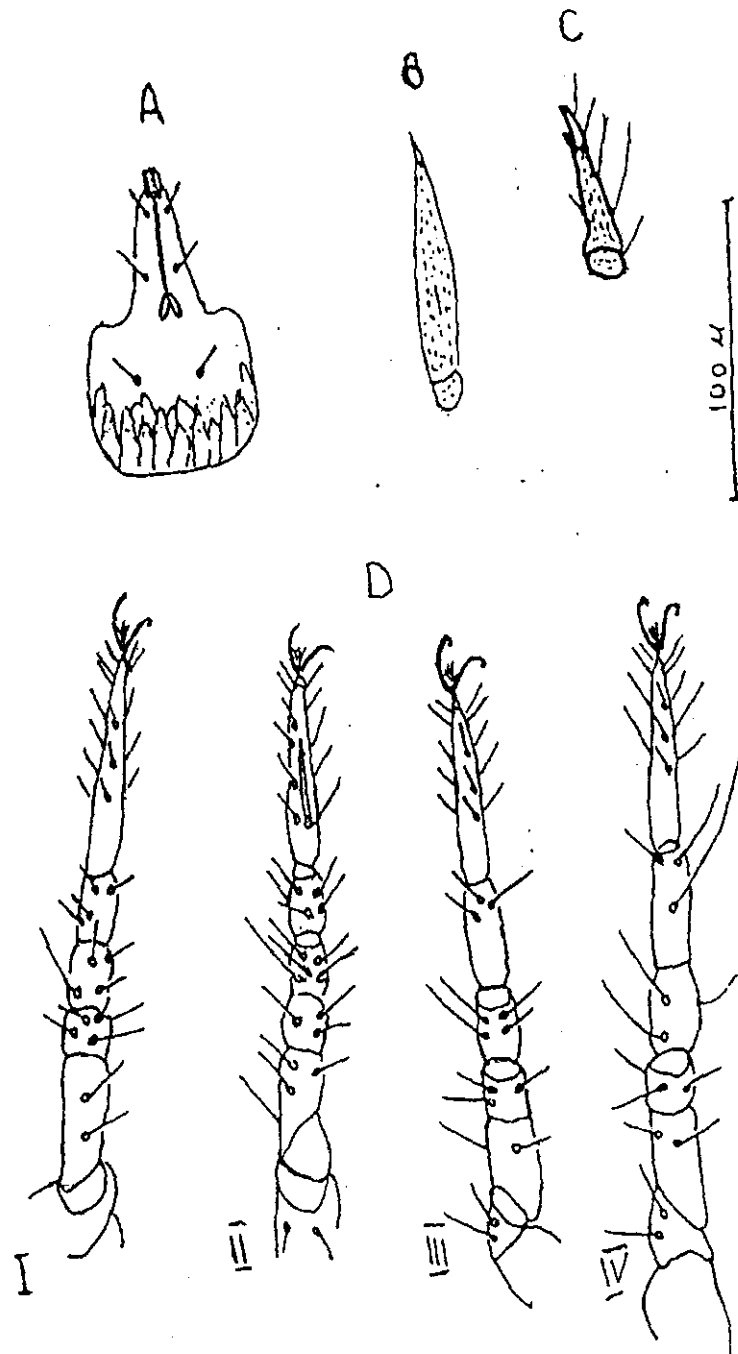


Fig. 8. Adult male of *Neocunaxoides metwalyii* sp.n. A- Hypostome
B- Chelecera C- Pedipalp D- Legs I-IV

ventrum: Differs from that of the female in several aspects (Fig. 7b). Subcuticular sculpturs occur on the sternal and hysterosomal coxal plates but not on the genital valves. Hypogasteral setae are carried on the integument. The genital valves flaked, the genital parts and carry two rows of genital straight setae. There are two pairs of genital papillae, which are well developed. Anal region appears dorsally but there is a pair of small anal setae ventrally and carry two rows of genital straight setae. There are two pairs of genital papillae, which are well developed. The anal region appears dorsally but there is a pair of small anal setae ventrally. Gnathosoma (Fig. 8a): is longer than broad, with smooth ventral surface except it's base, reticulated and there are three pairs of round reticulation anterior its base.

Ventral surface of hypostome bearing three pairs of hg-setae; the first pair on its tip and longer than the second; palp (Fig. 8c) 150 μm long; Trochanter lack setae; femur with 2 setae; genu with three simple setae; tibiotsarsus with five setae and a spine seta; claw at the tip of tibiotsarsus. Chelicera (Fig. 8b) 146 μm long; fixed digit with simple seta; movable setae as a claw.

Legs (Fig. 8d): I-IV; 284 μm , 266 μm , 288 μm , 277.7 μm , respectively.

Cheatotaxy : as in female.

Type material: One holotype female and one allotype male; paratypes 12 females and one male; all collected from castor and cotton plants in Qalubiya governorate and kept in the collection of Plant Protection Research Institute, Giza, Egypt.

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نوعين جديدين من أكاروسات فصيلة كيوناكسدي علي
نباتات القطن والخروع في مصر

مجدى محمد حسين فوزى ، عابدين محمود خليل

معهد بحوث وقاية النباتات - مركز البحوث الزراعية - الدقي - الجيزة

تم تسجيل نوعين جديدين من الأكاروسات المفترسة من فصيلة كيوناكسدي وهما *Coleoserius zaherii* sp.n. و *Neocunaxoides metwalyii* sp.n. جمعت العينات من أوراق نباتات القطن والخروع بمحافظة القليوبية بجمهورية مصر العربية. تم تصنيف هذين النوعين ورسمها ووصفها مورفولوجيا.