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THREE NEW SPECIES OF THE GENUS RAPHIGNATHUS IN EGYPT
(PROSTIGMATA : RAPHIGNATHIDAE)

BY

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ABSTRACT

Five species of the genus Raphignathus are recorded in Egypt. Of the these, three species Raphignathus bakeri, R. evansi, and R. ehari are new, while R. gracilis (Rack), and R. collegiat1~s А., В., & С. are firstly recorded. The new species are described and a key to females of all collected species is given.

RESUME

Cinq espèces du genre Raphignathus sont signalées d'Égypte. Trois d'entre elles sont nouvelles : R. bakeri, R. evansi et R. ehari ; R. gracilis (Rack) et R. collegiat1~s А., В., & С. sont citées pour la première fois. Les nouvelles espèces sont décrites et une clé des femelles est donnée.

INTRODUCTION

Members of the family Raphignathidae are of predaceous feeding habit and this is generally based on observations in nature. Berlese's illustration (1894) of the type species Syncaligus petrobius (Canestrini, 1889) showed contiguous coxae on each side of body, one, rod-like seta on each tarsus, cervical peritremes, and fused chelicerae.

OUDEMANS (1923) ; and GRANDJEAN (1944) stated that the genus Syncaligus (Koch) 1938, seemed to be a synonym of Raphignathus.

BAKER and WHARTON (1952) kept the family Raphignathidae in a broad sense, including this family together with the Stigmaeidae and Caligonellidae, on the bases of having peritremes in cheliceral bases, large palpal claws, and terminal anus.

ATYE0 et al., (1961) recognized the family Raphignathidae by cervical peritremes and contiguous coxae. SUMMERS (1966) described this family by having chelicerae form a stylophore, paired peritremes running laterally from base of stylophore to make short loops in collar membrane between gnathosoma and podosoma, coxae II and III contiguous ; dorsal plates weakly developed, and tarsal segment shorter than palptibia. He added that genus Raphignathus included about 20 species. In (1968) SMILY and MOSER created a new genus of Raphignathidae, the Neoraphignathus.

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During this work, survey showed that the genus *Raphignathus* is represented by five species in Egypt. Of these, three species are considered new to science. This paper deals with the description of these new species together with a key to all collected species.

Dorsal setae nomenclature, presented here, is a combination of that used by Grandjean (1944) and Atyeo (1963). The setae are named as follows: On propodosoma, internal verticals (ae), external verticals (be), internal scapular (ce) and external scapular (de); on hysterosoma, internal humerals (a), external humerals (he); dorsocentrals (b), (c), (d), and (e); laterals (lr), and (le) on the sacral and clunal portions, respectively.

**Key to females of the Egyptian Raphignathid species**

1. Dorsum with a pair of small plates behind the anteromedian plate; ventrum with coxal plates .......................................................... 2
   — Dorsum without plates behind anteromedian plate; ventrum without coxal plates ...... 4
2. The anteromedian plate with two pairs of dorsal setae; a small plate with one simple seta adjacent to coxa III ....................................................................... *R. evansi* sp. n.
   — The anteromedian plate with three pairs of dorsal setae ........................................ 3
3. Two pairs of dorsal setae on small platelets between anterior plates and opisthosomal plate.. *R. gracilis* (Rack)
   — One pair of dorsal setae on small platelets between anterior plates and opisthosomal plate..
     *R. collegiatus* Atyeo
4. The anteromedian plate with three pairs of dorsal setae .................... *R. bakeri* sp. n.
   — The anteromedian plate with two pairs of dorsal setae ........................................ *R. ehari* sp. n.

**Genus: Raphignathus** Dugès, 1833

Small mites, with three, sometimes four large plates on podosoma, one large plate on opisthosoma, one pair of of small plates may be present behind the anteromedian plate and one pair of eyes on lateral propodosomal plates. Stylophore conical and movable digits needle-like; peritremata arising from posteromedian of stylophore and extending caudolaterally in cervical membrane at anterolateral margins of podosoma. Coxae II and III contiguous.

*Raphignathus gracilis* (Rack)

*Acheles gracilis* Rack, 1962. Collection data: Two adult females collected from soil, El-Manzala Dakahlia (Coastal region), July 10, 1969; and Kept in the collection of Faculty of Agriculture, Cairo University, Egypt.

*Raphignathus collegiatus* A., B., C., 1961

Collection data: Two adult females collected from palm trees, Abo-Rawash, Giza Province, November 20, 1975.
Raphignathus evansi sp. n.
(Fig. 1 A & B)

Female: Body ovoid, stylophore conical, longitudinally striated; movable digits long, needle-like. Peritremata originate at posterior of stylophore and each peritreme directed caudolateral, terminating near anterolateral margin of propodosoma. Palpus five-segmented, with distal segment of 4 solenidia distally and 3 setae laterally; tibia with small claw and three attenuated tactile setae.

Fig. 1: Raphignathus evansi sp. n.
A) Female dorsum; B) Female ventrum.

Dorsum: Propodosoma with one anteromedian and two anterolateral plates separated by finely striated areas, and two small plates posteriorly; opisthosoma with a large opisthosomal plate. Dorsal setae simple, relatively short, 11 pair; two pairs on the anteromedian plate (ae, a), (be) absent, three pairs on the anterolateral plate (ce, de, he); two pairs of dorsal setae on hysterosoma in the striated area (b, c) between the propodosomal plates and the opisthosomal plate; the dorsocentrals (c) on small platelets; 4 pairs of dorsal setae d, lr, e, le on the opisthosomal plate. Anal opening terminal with two pairs of subequal anal setae.

Ventrum with five pairs of ventral setae, the first pair between coxae I, the second located on small punctuated platelet adjacent to coxae III, the third between coxae IV and less spaced than the anterior ones, and two pairs on opisthosoma, the posterior pair on small platelets; the genitalia ventrally, with three subequal simple pairs of genital setae.
Legs relatively long; leg I and IV subequal and longer than II and III; coxae I-IV in one groupe (contiguous); genu I and tibia IV each with small cylindrical sensillum; tarsi I, II, and III each with claviform sensillum, but that of tarsus III smaller.

Measurements: Length of idiosoma (from bases of verticals to end of anal covers) = 327.5 μ; gnathosoma (from bases of verticals to top of pedipalps) = 175 μ; greatest width = 240 μ. Legs: I-IV = 322.5 μ, 267.5 μ, 290 μ, and 342.5 μ; anteromedian plate setae (from anterior to posterior): ae = 37.5 μ; and a = 22.5 μ; anterolateral plate setae: ce = 35 μ, de = 35 μ, and he = 27.5 μ; hysterosomal setae: b = 22.5 μ, c = 22.5 μ; opisthosomal plate setae: d = 22.5 μ, lr = 25 μ, e = 25 μ, and le = 27.5 μ.

Male: Not known.

Collection data: One adult female extracted from debris of ornamental plant Lantana camara on the farm of faculty of Agriculture, Giza, Middle Egypt, on June 13, 1969; and kept in the collection of the Faculty of Agriculture, Cairo University.

Raphignathus bakeri sp. n.
(Fig. 2 A & B)

Fig. 2: Raphignathus bakeri sp. n.
A) Female dorsum; B) Female ventrum.
FEMALE: Body ovoid. Stylophore long, conical; movable digits long, and needle-like. Peritremata originate at posterior of stylophore, and each peritreme directed caudolaterally, then terminates near anterolateral margin of propodosoma. Palpus five-segmented, with distal segment directed ventral, tibia with small claw; tarsus distally with a crown of 4 solenidia and laterally with three attenuated tactile setae.

Dorsum: Propodosoma with one anteromedial plate and two anterolateral plates; the anteromedian plate bears three pairs of setae (ae, be, and e), and anterolateral plates each bears three dorsal setae (ce, de, and he). Opisthosoma with an opisthosomal plate bearing 4 pairs of setae de, lr, e, and le; two pairs of setae (b and c) on hysterosoma between anteromedian plate and opisthosomal plate, and each seta located on small platelet. All dorsal plates separated with striated integument; dorsal setae 12 pairs relatively short and simple.

Ventrum with 5 pairs of simple setae; three subequal pairs on podosoma, and two unequal pairs on opisthosoma; the anterior pair longer than the posterior one; ventral surface very faintly striated. Genitalia ventrally, and with three pairs of genital simple setae; anus terminal, and anal covers with one pair of simple setae.

Legs relatively long, leg I & IV nearly equal in length and longer than legs II & III, Genua I and II each with small cylindrical sensillum, tarsi I & II each with one large claviform sensillum, tibia III with one small cylindrical sensillum.

Measurements: Length of idiosoma (from bases of verticals to end of anal covers) = 272.5 μ; gnathosoma (from bases of verticals to top of pedipalps) = 175 μ; greatest width = 190 μ; anteromedian plate setae (from anterior to posterior): ae = 32.5 μ, be = 27.5 μ; and a = 25 μ; anterolateral plate setae, c = 27.5 μ, de = 25 μ, he = 27.5 μ; two pairs of hysterosomal setae (b and c) (on platelets) equal (25 μ) ; opisthosomal plate setae: d, lr, and e equal in length (25 μ); and le shorter (25 μ). Legs: I-IV = 300, 257.5, 280, and 312.5 μ.

MALE: Not known.

Collection data: Three adult females collected from debris of Bambo leaves, Kafre-el-Dawar, Beheira Province, on September 16, 1970, and kept in the collection of Faculty of Agriculture, Cairo University.

Raphignathus ehari sp. n.
(Fig. 3 A & B)

FEMALE: Body ovoid, stylophore long, conical, longitudinally striated, apically, cleft movable digits long, and needlelike. Peritremata originate at base of stylophore and each peritreme directed caudolaterally, then terminates near anterolateral margin of propodosoma. Ventral hypostome not striated, with 4 pairs of simple setae. Palpus five-segmented; tarsus with crown of 4 bluntly rounded sensory seta, one lateral sensory seta, and three attenuate tactile setae; tibia with one small claw and three attenuate tactile setae.

Dorsum: Propodosoma with one anteromedial and two anterolateral plates separated by finely striated areas; one large plate on opisthosoma. Dorsal setae 11 pairs, relatively longer than other described species, and finely plumose; two pairs on anteromedian propodosomal plate; ae, be, (a absent), three pairs on each of anterolateral plate ce, de, and he, and one pair
of eyes, two pairs of setae on the striated area (b & c) between podosomal and opisthosomal plates, each seta located on small platelet and 4 pairs d, lr, e, and le on the opisthosomal plate; all ranging from 25 to 30 μ in length.

![Fig. 3: Raphignathus ehari sp. n.](image)

A) Female dorsum; B) Female ventrum.

Ventrum with 5 pairs of ventral simple setae, the anterior three pairs nearly equal in length, the first pair between coxae I, the second between coxae III and more spaced than others, the third between coxae IV, and two pairs on opisthosoma, the anterior longer than the posterior which located on small platelet; the genitalia ventrally, with three pairs of equal simple genital setae; anus terminal, anal covers with two pairs of setae on dorsum and one pair on venter. Legs relatively long; leg I & IV longer than II & III; coxae I-IV contiguous; genua I & II each with a small claviform sensillum; tarsi I & II each with a claviform sensillum, and that of tarsus III cylindrical and smaller.

**Measurements**: Length of idiosoma (from bases of verticals to end of anal covers) = 255 μ; gnathosoma (form bases of verticals to top of palpus) = 150 μ; greatest width = 162.5 μ; ante-
romedian plate setae (anterior to posterior) : ae = 30 \mu \text{m} and be = 27.5 \mu \text{m} ; anterolateral plate setae : ce = 30 \mu \text{m}, de = 27.5 \mu \text{m} and he = 25 \mu \text{m} ; hysterosomal setae b and c equal in length = 25 \mu \text{m}, and opisthosomal setae : de = 27.5 \mu \text{m}, lr = 25 \mu \text{m}, le = 27.5 \mu \text{m}, and e = 25 \mu \text{m}.

**Legs :**

I-IV = 290, 242.5, 287.5, and 312.5 \mu \text{m}.

**Male :** Not known.

**Collection data :** One adult female collected from date palm trees, Abo-Swaire, Ismailia (Canal Zone), on August 15, 1969, and kept in the collection of the Faculty of Agriculture, Cairo University.

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