

## Two New Species of *Histiostoma* Kramer and *Caloglyphus* Berlese (Acari: Acaridida) from Citrus Orchards in Assiut, Egypt

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### Abstract

On the occurrence of mite species affiliated to the Acaridida in Egypt is still far below the taxa discovered in other countries despite the description of many species and few genera especially in Upper Egypt. The current study focused on describing two new species pertaining to the families Acaridae (*Caloglyphus citri* n. sp.) and Histiostomatidae (*Histiostoma herbali* n. sp.) described herein as hypopi (heteromorphic deutonymphs) from soil and bermuda grass in citrus orchards in Assiut, Egypt.

**Keywords:** *Acari*, *Acaridida*, *Histiostomatidae*, *Acaridae*, *Caloglyphus*, *Histiostoma*, *citrus*, *Egypt*.

### Introduction

Knowledge concerning the Acaridides fauna in Egypt is extremely poor as compared to other groups of mites, many points concerning this group are questionable. However, several taxa were found to be new and several morphological characteristics were described. Many species and few genera affiliated to the Acaridida mites were recorded in Upper Egypt by Eraky (1993; 1994a,b; 1997; 1998; 1999a,b,c; 2000a,b); Eraky and Shoker (1993a,b; 1994); Eraky and Osman (2008a,b,c); Eraky *et al.* (2010) and Fakeer *et al.* (2014). In the present study, two new mite species, extracted from citrus trees in Assiut Governorate, are described and illustrated.

### Materials and Methods

Samples of soil and lower ground cover plants under citrus trees

from many localities in Assiut Governorate were collected and kept in plastic bags, and then transferred to the laboratory for examination. Mites were extracted by using Tullgren funnels and preserved in 70% ethyl alcohol. The collected specimens were cleared in lactic acid, mounted in Hoyer's medium on glass slides, dried on a hot plate, ringed with nail polish and examined under a phase-contrast microscope (BH-2, Olympus<sup>®</sup>, Japan). Measurements were taken with a graded eyepiece and illustrations were made using a drawing tube attached to the microscope. Images of mites were taken with the aid of a digital camera (Dino-Eye AM423X, Taiwan) controlled by Dino Capture 2.0 software. The type materials (accession codes: ACPPD57:25-29 & ACPPD67:60-66) were deposited as permanent glass slides in the Acari collection,

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## Results and Discussion

### 1- Family Histiostomatidae

#### *Histiostoma herbali* n. sp.

(Figs. 1-9)

**Measurements:** Length: 158-169µm, width: 59-63µm.

**Dorsal side (Fig. 1):** Body approximately oval in outline. Prodorsum anteriorly and laterally joining the surface of propodosoma. Propodosomal surface smooth, except of the presence of a characteristic pattern of two short arcuate lines originating behind the front of the propodosoma. Inner pair of prodorsal setae at the same length of the outer one and standing in front of the latter. Dorsosejugal region present, ornamented with heavystriae extending in width. Hysterosomal surface smooth. Propodosomal and hysterosomal setae short but well visible.

**Ventral side (Figs. 2& 8):** Infracapitulum of gnathosoma (Fig. 3) oblong, palpi short, but distinct, solenidia long, infracapitular setae short, but well observable. Apodemes thick, anterior sternal plate with ap.1 unusually large, well chitinized, ap.sa and ap.2 short, the former ending free and the latter hardly touching arc of sejugal apodemes. In posterior sternal plate, intermediate sternal apodeme short, ending free, the posterior one fused posteriorly with primordium of

genital opening. All epimeres open. Epimeres 1, 3 and 4 with normal suction disk each, aggenital suction one larger. Adhering plate normally developed, standing slightly far anteriorly from the posterior margin of the body (Fig. 9).

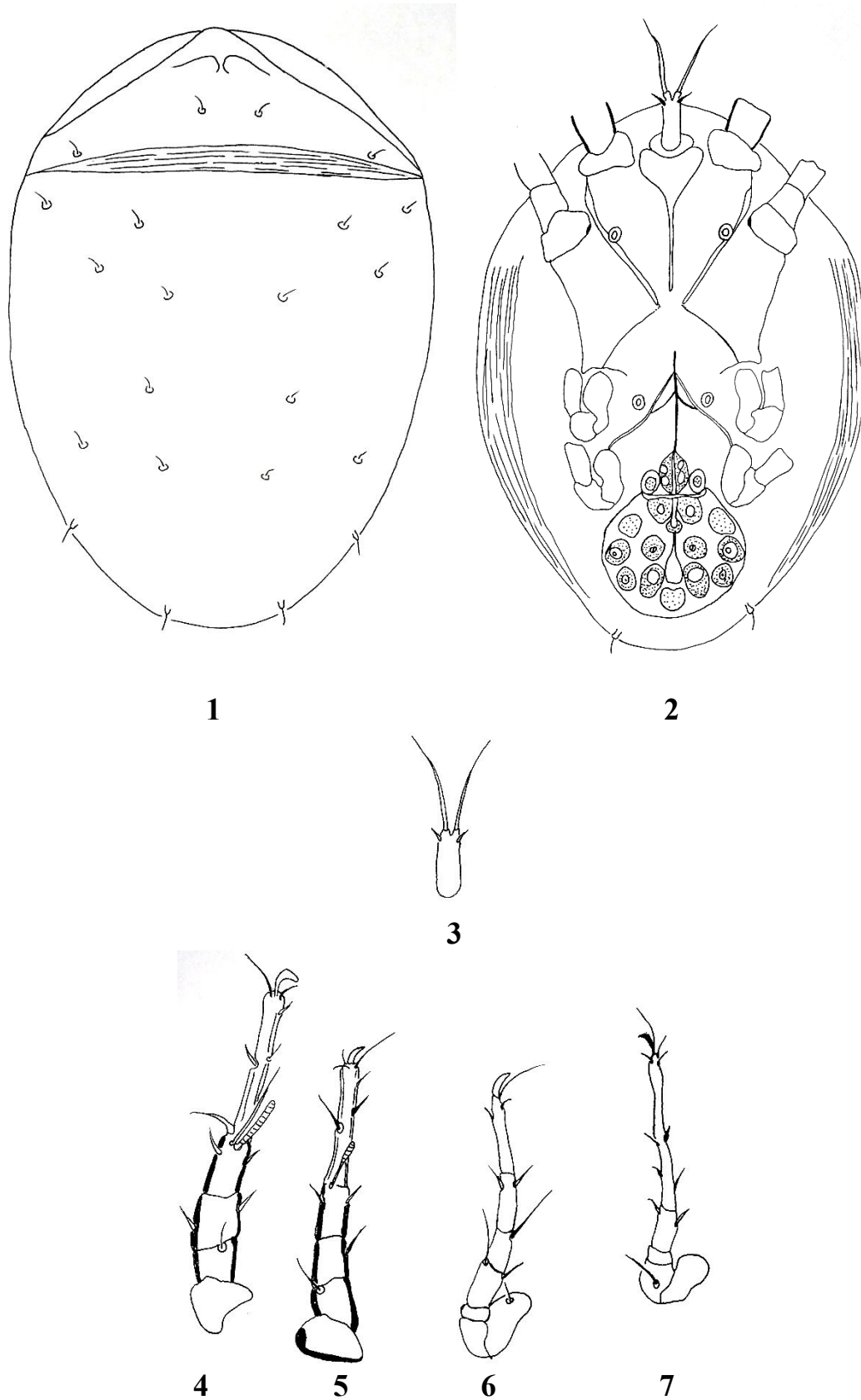
**Legs (Figs. 4-7):** All legs with normal claws. Adhering setae of tarsi I-IV thin, simple and approximately of the same length. Solenidiotaxy of legs consisting of a short and thin sigma solenidia on genu I and a comparatively long one on genu II. One phi solenidia on tibia I, invisible on tibia II. Omega-I coupled with phi at tibial apex.

#### Material examined

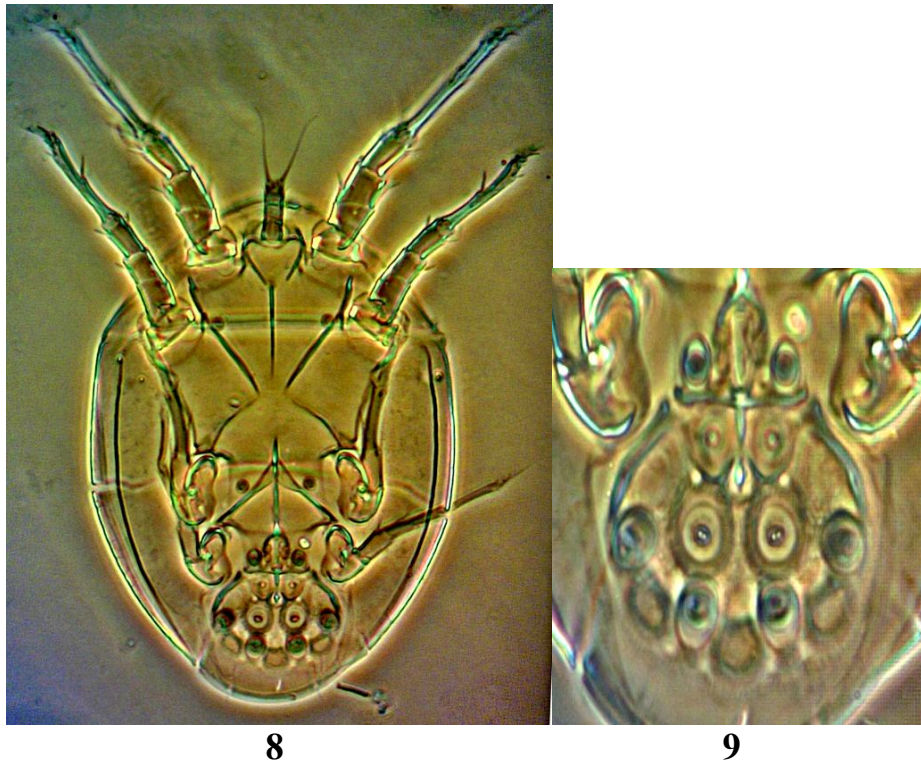
Holotype and 4 paratypes, soil of Bermuda grass, *Cynodon dactylon* L. under mandarin trees, Abu-Teeg, Assiut, 23 February 2015 by A.S. Abdelgayed. Type materials are deposited in the Plant Protection Dept., Faculty of Agriculture, Assiut University, Egypt.

#### Remarks

*Histiostoma herbali* n. sp. is distinguished from all heretofore known *Histiostoma* species by the unique shape of its ventral side (ap.1 and ap.sej.), in addition to the chaetotaxy of legs I and II. These characters differentiate the new species from its closely related species *Histiostoma pickaxe* formerly described by Eraky and Shoker (1993b).



**Figures (1-7)** *Histiostoma herballi* n. sp., 1. Dorsum; 2. Ventrum; 3. Gnathosoma; 4. Leg I; 5. Leg II; 6. Leg III; 7. Leg IV.



Figures (8 & 9) *Histiostoma herbali* n. sp., 8. Ventral side; 9. Suctorial plate, enlarged.

## 2-Family Acaridae

### *Caloglyphus citri* n. sp.

(Figs. 10-18)

**Measurements:** Length: 143-175 $\mu$ m and width: 97-122 $\mu$ m.

**Dorsal side (Fig. 10):** Body approximately ovoid in outline, anteriorly and posteriorly rounded. Both pairs of propodosomal setae relatively short and thin, inner pair standing anteriorly to the outer one, yet in the same length. Dorsejugal region present, ornamented with transversal lines. Surface of propodosoma smooth, without any sculpture. Surface of notogaster smooth, all setae also short and thin.

**Ventral side (Fig. 11& 17):** Infracapitulum of gnathosoma (Fig. 12) large and wide, nearly trapezoid. Infracapitular setae approximately long and thick, solenidia long, but thick

basally, palpi well-distinct. Anterior sternal plate with anterior sternal apodeme and apodeme II short, ending free, thus epimeres I and II open. In posterior sternal plate, allapodemes long, forming a close network, thus epimeres III and IV close. Epimeres I, III and IV with well-developed suction disk each, in addition to a pair of short and simple setae standing beside intermediate sternal apodeme. Adhering plate relatively small, but all disks D and Ds well-discernible (Fig. 18). The plate situated somewhere anteriorly of the posterior body margin. Entire surface between the plate and the posterior body margin ornamented with punctulae.

**Legs (Figs. 13-16):** Tarsi of legs I and II with large spoon-shaped adhering setae. All tarsi with well-developed claws. Solenidia  $\omega$ 1 of tarsi of legs I and II long and thick.

Solenidia  $\phi 1$  of leg I very long, much longer than entire tarsus. Solenidia  $\phi 1$  of leg II shorter and thinner than  $\phi 1$  of leg I. Solenidia  $\sigma 1$  of leg I and II thin and simple, the former much longer than the latter. Tibiae of legs I and II bearing large spiniform setae. All legs with several simple setae each.

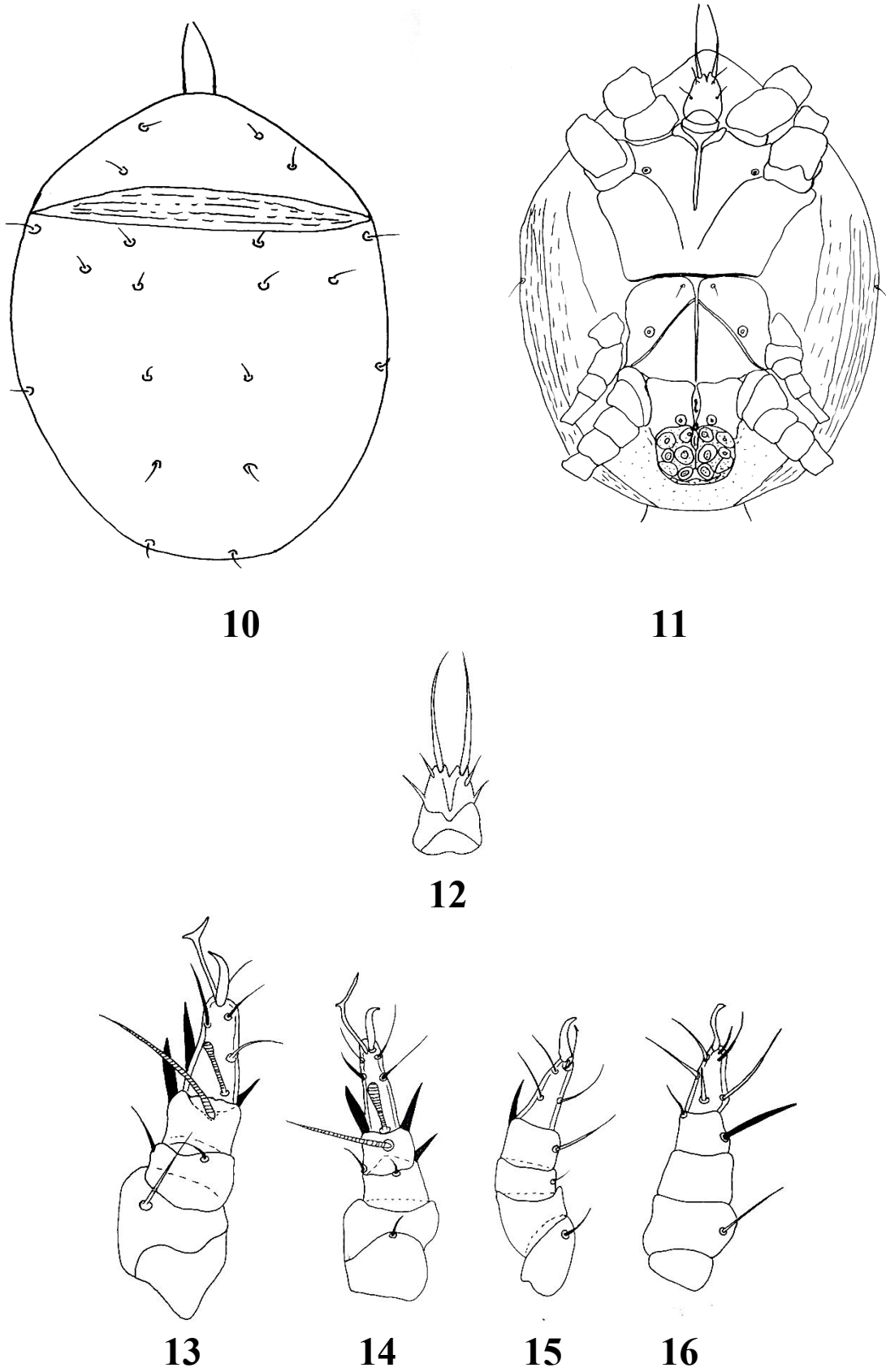
**Material examined**

Holotype and 6 paratypes, soil under limon trees planted in the Pomology farm, Faculty of Agriculture, Assiut University, 25 January 2015 by A.S. Abdelgayed. Type materials

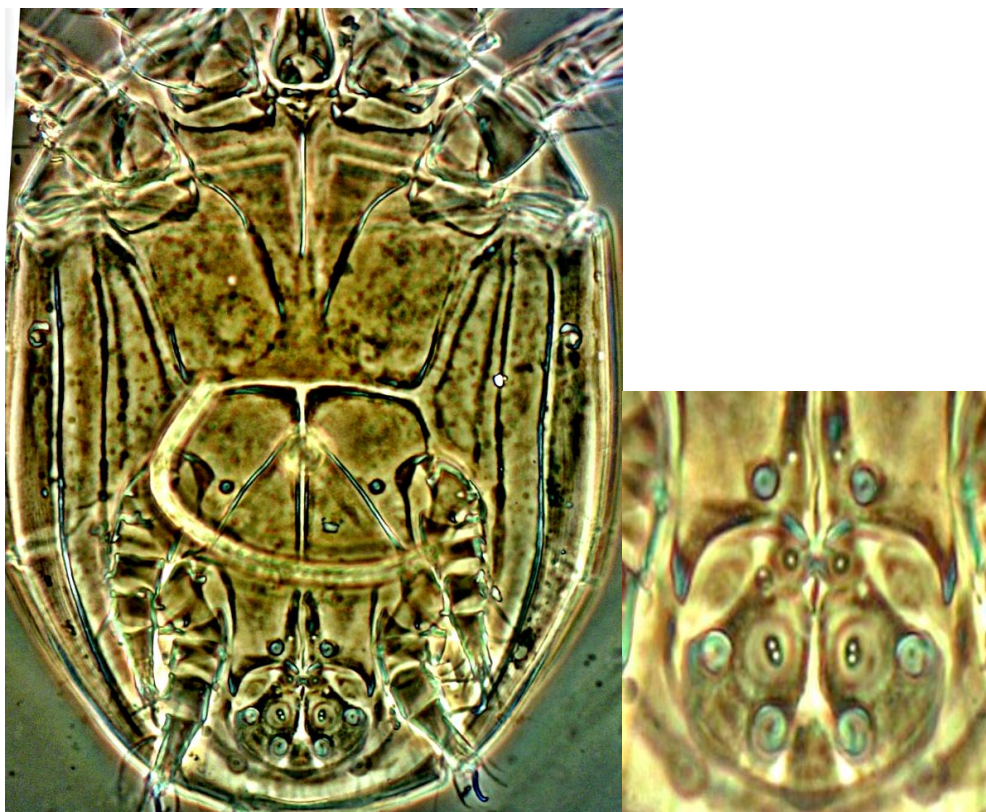
were deposited in the Plant Protection Dept., Faculty of Agriculture, Assiut University, Egypt.

**Remarks**

According to the structure of all legs and the configuration of the sternal plates, the new species is assignable to the genus *Caloglyphus* Berlese, 1923. The new species differs from its congeners by the structure and the chaetotaxy of legs I and II, in addition to the course and the shape of apodemes and the shape of its gnathosoma.



**Figures (10-16)** *Caloglyphus citri* n. sp., 10. Dorsum; 11. Ventral side; 12. Gnathosoma; 13. Leg I; 14. Leg II; 15. Leg III; 16. Leg IV.



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**Figures (17 & 18)** *Caloglyphus citri* n. sp., 17. Ventral side; 18. Suctorial plate, enlarged.

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## نوعان جديدان من الحلم تابعة لجنسي *Caloglyphus* و *Histiostoma*

(الأكاروسات: عديمة الثغور التنفسية) من بساتين الموالح في أسيوط، مصر

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### الملخص

لا تزال أنواع الحلم التابعة لرتبة عديمة الثغور التنفسية في مصر أقل بكثير من الأنواع المكتشفة في بعض البلدان الأخرى على الرغم من وصف أنواع وأجناس عديدة في صعيد مصر. ولقد ركزت الدراسة الحالية على وصف نوعان جديدان هما: *Histiostoma herballi* n. sp. من فصيلة Histiostomatidae و *Caloglyphus citri* n. sp. من فصيلة Acaridae، واللذان تم وصفهما من أطوار الحوريات الثانية حيث جمعت من التربة وحشيشة النجيل في بساتين الموالح في أسيوط، مصر.