

Description of *Heterodispus longisetae* n. sp. (Acari: Heterostigmatina: Scutacaridae) from Soil of Citrus Orchards in Assiut, Egypt

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Abstract

A survey of mite fauna inhabiting citrus orchards in Abutig, Assiut Governorate, yielded the discovery of a new species, *Heterodispus longisetae* n. sp. (Acari: Scutacaridae). The new species is morphologically described and illustrated.

Keywords: *Acari, Heterostigmata, Scutacaridae, Heterodispus, citrus, Egypt.*

Introduction

Mites of the family Scutacaridae Oudemans, 1916 (Acari: Trombidiformes: Heterostigmatina) inhabit soil, forest litter, decomposing organic substrates, moss and manure. They are also associated with various arthropods including ants, bees, flies, beetles and arachnids (Metwali, 1984; Momen, 1989; Khaustov and Chydydrov, 2004; Khaustov, 2008), while some species are fungivorous (Khaustov, 2008; Jagersbacher-Baumann and Ebermann, 2012). This family consists of 24 genera and more than 800 species (Zhang, 2011). The genus *Archidispus* Karafiat, 1959 contains about 70 described species that are mostly associated with beetles of the family Carabidae (Kurosa, 1980; Khaustov, 2008). Distinct female dimorphism has been known in various scutacarids including species of the genus *Archidispus*. Some species are phoretic and showing specific characters suitable for such behavior (Ebermann, 1991, 1999).

Until now, two scutacarid genera *Heterodispus* and *Scutacarus* have been reported in Egypt (Metwali, 1984; Jagersbacher-Baumann

and Ebermann, 2012), however, the genera *Archidispus*, *Imparipes* and *Pygmodispus* have never been recorded from Egypt. The genus *Heterodispus* Paoli, 1911 is worldwide in distribution and consists of 35 species, eight of them are described from Egypt, namely: *Heterodispus elongatus* Trägårdh, 1905, *H. adrosii* Metwali, 1984, *H. aegyptensis* Momen & El-Bagoury, 1989, *H. aegyptiacus* Sevastianov and Abo-Korah, 1985, *H. evansi* Momen & El-Bagoury, 1989, *H. osmani* Sevastianov and Abo-Korah, 1985, *H. rackae* Metwali, 1984 and *H. youssefi* Metwali, 1984. Paoli (1911) established *Heterodispus* as a new subgenus of *Imparipes* Berlese using *H. elongatus* as type species. The present work describes a new species of *Heterodispus* from soil of citrus in Egypt.

Materials and Methods

Samples of leaf litter and soil under citrus trees were collected from different localities in Abutig at Assiut governorate. Mites were extracted 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, Japan). Measurements in micrometers (μm) were taken with a graded eyepiece and illustrations were made using a drawing tube attached to the microscope. The terminology and setal nomenclature used in the description were according to Lindquist (1986). The voucher slide-mounted samples were deposited in the Acari collection, Plant Protection Department, Faculty of Agriculture, Assiut University, Egypt (FAAU).

Results and Discussion

Cohort Heterostigmatina

Superfamily Pygmephoroida Cross, 1965

Family Scutacaridae Oudemans, 1916

Genus *Heterodispus* Paoli, 1911

Heterodispus longisetae n. sp.

(Figures 1–4)

Female (holotype). Idiosomal length 230 μm , width 172 μm ; body oval to elongate. Dorsum (Figure 1). Free margin of tergite *C* with marked stripes; all dorsal setae finely serrated and sharply pointed. Setae *c1* and *c2* well developed and without alveoli. Cupules *ia* (tergite *D*) and *ih* (tergite *H*) small and oval. Setae *h1* and *h2* distinctly long. Length of dorsal setae: *c1* 37, *c2* 34, *d* 40, *e* 35, *f* 37, *h1* 43, *h2* 40 μm . Distances between bases of setae: *c1*–*c1* 67, *d*–*d* 71, *f*–*f* 50, *h1*–*h1* 20, *h2*–*h2* 56 μm . Posterior margin of tergites *C*, *D* and *EF* smooth. Body surface finely stippled, anterior margin of tergite *C* with fine, longitudinal stripes.

Venter (Figure 2). Apodemes I, II and sejugal apodeme (v-shaped) well developed and merged with presternal apodeme. Apodemes III

weakly developed while apodemes IV very short and joined with post-sternal apodeme. Apodemes V absent. All ventral setae thick, serrated and sharply pointed; setae *1a* the shortest and *4b* the longest. Setae *4b* inserted anteriorly of *4a*, however, positions of insertions of setae *4a* and *4b* quite variable among paratypes. Posterior margin of ventral metapodosomal plate convex. Pseudanal setae finely serrated; setae *ps1* visibly longer and thicker than *ps2* and *ps3*. Setal lengths: *1a* 27, *1b* 29, *2a* 28, *2b* 38, *3a* 77, *3b* 63, *3c* 55, *4a* 65, *4b* 89, *4c* 57 μm . Distances between bases of setae: *1a*–*1a* 29, *1b*–*1b* 44, *2a*–*2a* 35, *2b*–*2b* 39, *3a*–*3a* 15, *3b*–*3b* 35, *3c*–*3c* 66, *4a*–*4a* 28, *4b*–*4b* 49, *4c*–*4c* 63 μm .

Legs (Figures 3 & 4). Setations of legs I (solenidia in parenthesis): Tr1–Fe3–Ge4–Ti4–Ts15 or 16(4). Tarsus I (Figure 3) with distinct sickle-like claw. Solenidion $\omega 1$ long and finger-shaped, $\omega 2$, $\phi 1$ and $\phi 2$ smaller and thinner. Leg IV (Figure 4): Tr1–Fe2–Ge1–Ti3–Ts4. Trochanter with posteroventral axe-like projection. Tarsus with long pretarsus and minute empodium distally.

Males and larvae unknown.

Type material

Holotype and paratype females were collected from leaf litter under mandarin; Abutig, Assiut, Egypt; 23 February 2015; leg. A.S. Abdelgayed. Type materials are deposited in the Plant Protection Department, Faculty of Agriculture, Assiut University, Egypt (FAAU).

Remarks

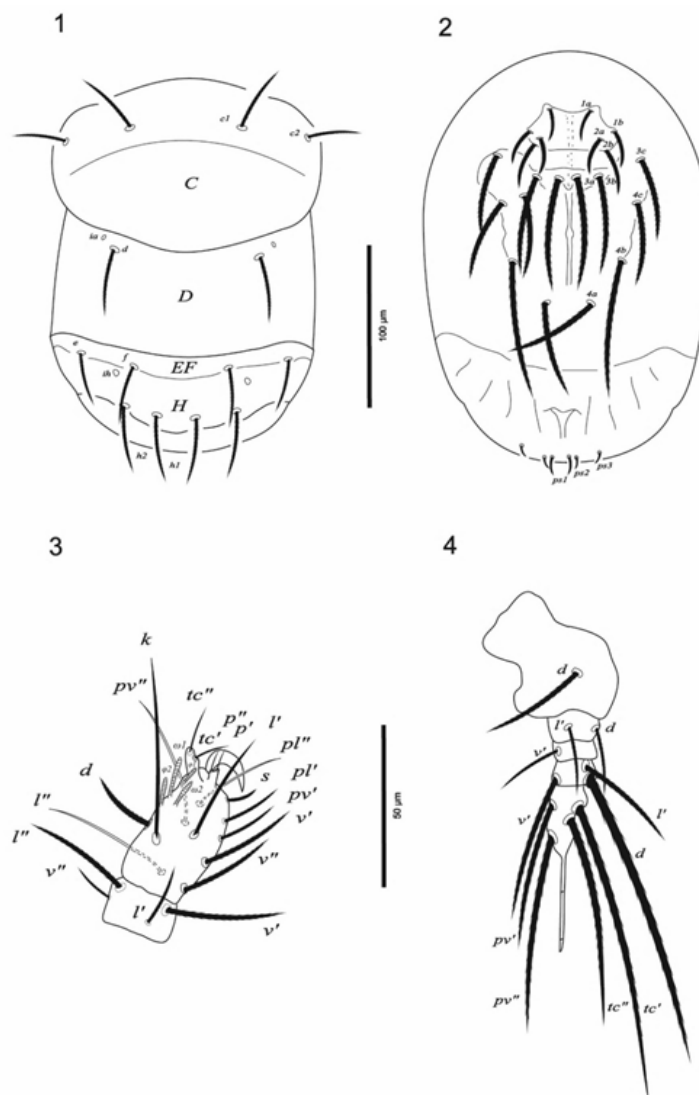
The genus *Heterodispus* comprises two subgenera, *Heterodispus* Paoli, 1911 and *Teherodispus* Ma-

hunka, 1974 (Mahunka, 1977). Commonly, *Heterodispus* species have setae *c1* and *c2* set on the outer free margin of clypeus but with few exceptions as in *H. curryi* Momen, 1989 and *H. (T.) konrathi* Mahunka, 1974 setae *c1* arise behind the clypeus. The new species is very close to *H. chanti* Soliman & Kandeel (in Zaher, 1986), however, it can be distinguished in having: (i) dorsal setae serrated and

alveoli indistinct vs. simple and set on distinct alveoli in *H. chanti*, (ii) ventral setae sharply pointed vs. blunt-ended in *H. chanti* and (iii) opisthosomal setae longer in the new species than in *H. chanti*.

Etymology

The species epithet *longisetae* refers to the distinctly long dorsal and ventral setae.



Figures 1-4. *Heterodispus longisetae* n. sp. Female. 1. Dorsal view; 2. Ventral view; 3. Tibia and tarsus of leg I; 4. Leg IV.

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وصف *Heterodispus longisetae* كنوع جديد من الحلم التابع لفصيلة Scutacaridae والمستخرج من تربة بساتين الموالح في أسيوط، مصر

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الملخص

أجريت هذه الدراسة في محافظة أسيوط في بساتين الموالح بمركز أبحاث، حيث تم جمع الأنواع الأكاروسية من التربة أسفل أشجار اليوسفي ومن بينها تم تسجيل الحلم *Heterodispus longisetae* كنوع جديد من الأنواع الأكاروسية التابعة لفصيلة Scutacaridae. ولقد تم وصف ومناقشة الصفات المورفولوجية المستخدمة في تصنيف هذه المجموعة واتضح أن هذا النوع لم يتم إكتشافه من قبل، حيث تمت الدراسة من الناحية التقسيمية ونوقشت الصفات المورفولوجية للأنواع قريبة الشبه من النوع الجديد لأظهار أهم الاختلافات التي أدت إلى فصل هذا النوع عن غيره وتسجيله كنوع جديد.