

IDENTIFICATION OF PROSTIGMATID MITES ASSOCIATED WITH HAWTHORN TREES IN WEST OF IRAN

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Abstract

Prostigmatid mite fauna of hawthorn trees, Crataegus monogyna Jacq. (Rosaceae), in Hamedan, Kurdistan and Kermanshah provinces were studied during 2009–2013. Mites specimens were collected from soil under trees and also aerial parts of hawthorn trees in hamedan, Kermanshah and Kurdistan and mounted directly in Hoyer's medium. In this study in total 17 species belonging to 13 genera and 9 families were collected and identified. Three species were new for the world Acari fauna and marked in the text by asterisk (). The collected mites according to their families, genera and species are as follows: **Bdellidae**: Spinibdellacronini (Baker & Balock, 1944); **Pseudocheylidae**: Anoplocheylus sinai Bagheri 2013; **Caligonellidae**: Caligonella humilis (Koch, 1838), Molothrognathus sp. nov. *, Neognathus terrestris Summers & Schlinger, 1955, N. ueckermanni Bagheri and Haddad Irani-Nejad, 2010; **Cryptognathidae**: Favognathus alvandii Khanjani and Seeman 2014*; **Raphignathidae**: Raphignathus hecmataniensis Khanjani & Ueckermann, 2003, R. protaspus Khanjani & Ueckermann, 2002, R. collegiatus Atyeo and Crossley, 1961; **Stigmaeidae**: Eustigmaeus nasrinae Khanjani & Ueckermann, 2002; **Linotetranae**: Linotetranus astragalusi Khanjani and Khanjani 2011; **Tenuipalpidae**: Cenopalpus bakeri Düzgünes, 1967, Cenopalpus crataegi Dosse, 1971, Colopalpus zahirii (Khanjani & Seeman 2013)*, Tenuipalpus euonymi Khosrowshahi, 1991; **Tetranychidae**: Tetranychus urticae Koch 1836. Among them family Raphignathidae with 3 species were found frequently, Colopalpus zahirii had high population and was first record from Iran and Spinibdellacroninialmost with wide distribution in these areas.*

Key words: Raphignathidae, Tetranychoidae, predatory species, spider mites, cosmopolitan.

INTRODUCTION

Suborder Prostigmata belongs to the order Trombidiformes and comprises 36 superfamilies. Superfamily Bdelloidea comprises a moderately assemblage of predatory species grouped in two cosmopolitan families: *Bdellidae* and *Cunaxidae* (Krantz and Walter, 2009). Members of the family Pseudocheylidae are thought to be predators, they are found under tree bark, in litter and moss (Ueckermann and Khanjani, 2004). Members of superfamily Raphignathoidea are important biological control agents of spider mites, eriophyid mites and scale insects in agriculture and forestry. They were found in various ecosystems: foliage, branches, trunks, moss and lichen, litter, soil, animal nests, stored products and even in house dust (Fan and Zhang, 2005). Superfamily Tetranychoidae are obligatory phytophagous mites assigned to five recognized families. Most of species that are of major economic importance are contained in two families, Tetranychidae and Tenuipalpidae

(Krantz and Walter, 2009). Up to date, 18 species of genus *Eustigmaeus*, 12 species of genus *Raphignathus*, 7 species of the genus *Favognathus*, 10 species of the genus *Molothrognathus*, 15 species of genus *Linotetranus*, 9 species of genus *Tenuipalpus*, 18 species of *Cenopalpus*, 4 species of genus *Spinibdella*, 4 species of genus *Caligonella*, 6 species of genus *Neognathus*, 8 species of genus *Tetranychus* and 6 species of genus *Anoplocheylus* have been recorded from Iran (Bayzavi et al., 2013; Khanjani et al., 2012; Khanjani et al., 2013; Ahmad Hoseini et al., 2014; Khanjani et al., 2014; Paktinat-Saeedi et al., 2015; Bagheri et al., 2013; Mahdavi et al., 2013 and Khanjani et al., 2014).

In this paper, we have reported 17 species belonging to 13 genera from 9 families: *Bdellidae*, *Caligonellidae*, *Pseudocheylidae*, *Cryptognathidae*, *Raphignathidae*, *Stigmaeidae*, *Linotetranae*, *Tenuipalpidae* and *Tetranychidae* which were collected from west of Iran.

MATERIALS AND METHODS

Mites specimens were collected from hawthorn trees, *Crataegus monogyna* Jacq. (Rosaceae) in western parts (Hamedan, Kermanshah and Kurdistan) of Iran. In this order, samples were collected from soil under trees and also aerial parts of plants and taken into the laboratory for processing. Mites were removed from plant leaves with a No. 0 paint brush under a Wild M8 stereomicroscope and also Berlese funnel was used to extract the soil and litters specimens under hawthorn trees. The specimens were mounted directly on slides in Hoyer's medium. The collected specimens were identified by means of an Olympus BX51 differential interference contrast microscope under 1000X magnification.

RESULTS AND DISCUSSIONS

In this study, totally 13 genera and 17 species were recorded from west of Iran, three species were new for the world Acari fauna and marked in the text by asterisk (*). Identified species as follows:

Taxonomy

Superfamily Bdelloidea

Family Bdellidae Dugès, 1834

Genus *Spinibdella* Thor, 1930

S. cronini (Baker & Balock, 1944)

Distribution: Three females collected from Marivan, Kurdistan, 3 September 2013; three females from Nahavand, Hamedan, 21 October 2013; one female from Sanandaj, Kurdistan, 10 July 2014 and one female from Sarv-Abad, Kurdistan, 5 May 2014.

Superfamily Cheyletoidea

Family Pseudocheylidae Oudemans, 1909

Genus *Anoplocheylus* Berlese, 1910

A. sinai Bagheri 2013

Distribution: Two females collected from Tuyserkan, Hamedan, 29 September 2010 and one female from Hamedan, Hamedan, 23 October 2012.

Superfamily Raphignathoidea Kramer, 1877

Family Caligonellidae Grandjean, 1944

Genus *Caligonella* Berlese, 1910

C. humilis (Koch, 1838)

Distribution: One female collected from Tuyserkan, Hamedan, 29 September 2010.

Genus *Molothrognathus* Summers & Schlinger, 1955

Molothrognathus sp. nov.**

Distribution: Two females collected from Tuyserkan, Hamedan, 29 September 2010.

Genus *Neognathus* Willmann, 1952

1. *N. terrestris* Summers & Schlinger, 1955

Distribution: One female collected from Nahavand, Hamedan, 12 July 2013.

2. *N. ueckermanni* Bagheri and Haddad Irani-Nejad, 2010

Distribution: Four females collected from Tuyserkan, Hamedan, 19 October 2010.

Family Cryptognathidae Oudemans, 1902

Genus *Favognathus* Luxton, 1973

F. alvandii Khanjani and Seeman 2014*

Distribution: Five females collected from Tuyserkan, Hamedan, 11 October 2012.

Family Raphignathidae Kramer, 1877

Genus *Raphignathus* Dugès, 1834

1. *R. hecmataniensis* Khanjani & Ueckermann, 2003

Distribution: Nine females collected from Kermanshah, Kermanshah, 3 November 2013; six females from Salavat Abad, Kurdistan, 10 November 2013; two females from Marivan, Kurdistan, 10 November 2013.

2. *R. protaspus* Khanjani & Ueckermann, 2002

Distribution: Two females collected from Hamedan, Hamedan, 17 September 2013; three females and 1 males from Kermanshah, Kermanshah, 10 July and 17 September 2013; six females from Salavat Abad, Kurdistan, 10 July 2013.

3. *R. collegiatus* Atyeo and Crossley, 1961

Distribution: Eight females collected from Kermanshah, Kermanshah, 23 September 2013; one female from Marivan, Kurdistan, 15 July 2013.

Family Stigmaeidae Oudemans, 1931

Genus *Eustigmaeus* Berlese 1910

E. nasrinae Khanjani & Ueckermann, 2002

Distribution: Five females collected from Hamedan, Hamedan, 4 September 2010.

Superfamily Tetranychoidae

Family Linotetranychidae Baker & Pritchard, 1953

Genus *Linotetranychus* Berlese, 1910

L. astragalusi Khanjani and Khanjani 2011

Distribution: Two Females collected from Tuysekan, hamedan, 28 September 2010.

Family Tenuipalpidae Berlese 1913

Genus *Cenopalpus* Pritchard and Baker, 1958

1. *C. bakeri* Düzgünes, 1967

Distribution: Seven Females collected from Hamedan, hamedan, 18 September 2010 and 21 September 2013.

2. *C. crataegi* Dosse, 1971

Distribution: One Female collected from Hamedan, hamedan, 18 September 2010.

Genus *Colopalpus* Pritchard and Baker 1958

C. zahirii (Khanjani & Seeman 2013)*

Distribution: Twenty eight females collected from Simin, Hamedan, 10 October 2012.

Genus *Tenuipalpus* Donnadieu, 1875

T. euonymi Khosrowshahi, 1991

Distribution: Three females collected from Sanandaj, Kurdistan, 3 October 2009.

Family Tetranychidae Donnadieu, 1875

Genus *Tetranychus* Dufour, 1875

T. urticae Koch 1836

Distribution: Nine females collected from Hamedan, hamedan, 12 September 2010 and 10 November 2013.

We have reported 17 species belonging to 13 genera from 9 families: *Bdellidae*, *Caligonellidae*, *Pseudocheylidae*, *Cryptognathidae*, *Raphignathidae*, *Stigmaeidae*, *Linotetranychidae*, *Tenuipalpidae* and *Tetranychidae* which were collected from west of Iran.

Three species (*Colopalpuszahirii*, *Favognathusalvandi* and *Molothrognathu ssp. nov.*) were new for the world acari fauna.

Among them family Raphignathidae with 3 species was found frequently, *Spinibdellacronini* almost with wide distribution in these areas and

Colopalpuszahirii was first record from Iran and had high population.

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