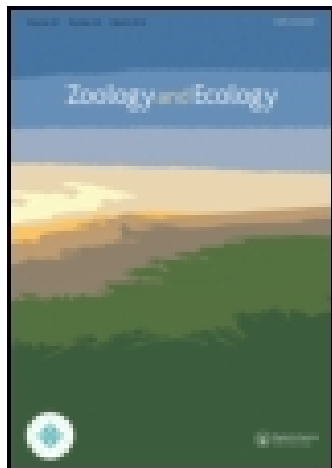


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New contribution to the eriophyoid (Acari: Eriophyidae) fauna of Iran

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Four eriophyoid species were identified as new records for the Iranian fauna from South Khorasan province. These species are *Aceria sobhiani* Sukhareva, *Aceria medicaginis* (Keifer) (Eriophyinae: Acerini), *Aculops cannabicola* (Farkas) and *Aculus anthobius* (Nalepa) (Phyllocoptinae: Anthocoptini). These records increase the eriophyoid fauna of Iran to 127 species.

Keturios naujos Irano faunai gumbadarių erkių rūšys: *Aceria sobhiani* Sukhareva, *Aceria medicaginis* (Keifer) (Eriophyinae: Acerini), *Aculops cannabicola* (Farkas) ir *Aculus anthobius* (Nalepa) (Phyllocoptinae: Anthocoptini) buvo užregistruotos Pietų Khorosan provincijoje. Įskaitant šias rūšis, Irane žinomos 127 gumbadarių erkių rūšys.

Keywords: acarofauna; Eriophyoidea; *Aceria sobhiani*; *Aceria medicaginis*; *Aculops cannabicola*; *Aculus anthobius*

Introduction

Eriophyoid mites are of economic importance as plant pests and potential biological control agents for weeds. Despite their importance, only a small part of eriophyoids of Iran have been discovered and described, which is similar to the situation in the rest of the world (Amrine 1996). They have not been adequately studied systematically or biologically. Some of them cause a variety of plant aberrations such as galls, leaf blisters and rusts, but many do not cause any obvious symptoms to their host plants. Their small size and cryptic appearance make them difficult to detect and therefore infestations are often overlooked. Xue, Sadeghi, and Hong (2009) reviewed the literature and gave a preliminary list of 89 species recorded in Iran. Since then, more eriophyoids from Iran have been recorded and described by several authors (e.g. Kamali and Jalaeian 2011, 2013; Lotfollahi et al. 2012, 2013; Xue, Sadeghi, and Hong 2012; Xue et al. 2011, 2013). As a result, the total number of eriophyoid mite species recorded in Iran before the present study was 124. Since the eriophyoid fauna has not been surveyed in many parts of Iran, more surveys and studies must be undertaken to give a complete inventory of the diversity of these mites in this country.

Materials and methods

This study was conducted during 2012 and 2013. Mite species were collected by the first and second authors from their host plants in Ferdows region in South Khorasan province (30°32'–34°50' N and 57°57'–60°57' E) of Iran. No previous surveys of plant feeding mites have been carried out in this area. Mite specimens were cleared in

lactic acid for 7–10 days and then mounted in Hoyer's medium. Systematic knowledge and synonyms of the identified species were obtained from Amrine, Stasny, and Flechtmann (2003). Some species were identified or confirmed by Dr Radmila Petanovic (University of Belgrade, Serbia). The distribution of some species was obtained from the recent update of Fauna Europaea (www.faunaeur.org). Voucher specimens were deposited at the Department of Plant Protection, Faculty of Agriculture, Ferdowsi University of Mashhad and the Department of Entomology, Faculty of Agriculture, University of Belgrade, Serbia.

Results

Four species, namely *Aceria sobhiani* (Sukhareva) (Eriophyinae: Acerini), *Aceria medicaginis* (Keifer) (Eriophyinae: Acerini), *Aculops cannabicola* (Farkas) (Phyllocoptinae: Anthocoptini) and *A. anthobius* (Nalepa) (Phyllocoptinae: Anthocoptini) are reported from Iran for the first time.

Eriophyinae, Nalepa (1898).

Aceriini, Amrine and Stasny (1994).

Aceria, Keifer (1944).

A. sobhiani, Sukhareva (2001).

A. sobhiani, Sukhareva (2001, 131–141).

Material: 4 ♀♀ (Slides IR92-F11:1–4); *Acroptilon repens* L. (Asteraceae); the vicinity of Ferdows, Iran (34°02'44" N 58°13'13"E); 10 October 2013.

Relation to host plant: Vagrant, no specific damage was observed.

Distribution: Uzbekistan (Sukhareva 2001), Iran.

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A. medicaginis, Keifer (1941; alfalfa bud mite, lucerne bud mite).

Eriophyes medicaginis, Keifer (1941, 196–216).

E. medicaginis, Jeppson, Keifer and Baker (1975, 450).

E. medicaginis, Davis et al. (1982, 254).

A. medicaginis, Amrine and Stasny (1994, 63).

A. medicaginis, Lindquist, Sabelis and Bruin (1996, 245).

Material: 7♀♀ (Slides IR92-F8:1–7); *Medicago orbicularis* (L.) Bartal.; Ferdows (Islamiyeh about 3 km NE of Ferdows), Iran; 28 October 2013.

Relation to host plant: In this survey, no plant damage was observed, but this species causes witches-broom on *M. orbicularis* in Australia and North America (Jeppson, Keifer, and Baker 1975; Keifer 1941). Infested plants become dwarfed, the crown of shoots increases, stems become fine with erect bunchy foliage and leaves remain small, rounded, puckered and slightly chlorotic (Jeppson, Keifer, and Baker 1975).

Distribution: Bosnia and Herzegovina, Bulgaria, Greek mainland, Italy, Spain, Yugoslavia, Australian region, Nearctic region, Oriental region (www.faunaeur.org).

Phyllocoptinae, Nalepa (1892).

Anthocoptini, Amrine and Stasny (1994).

Aculops, Keifer (1966).

A. cannabicola, (Farkas 1960).

Vasates cannabicola, Farkas (1960, 321–322).

V. cannabicola, Boczek and Maciejczyk (1993, 409).

A. cannabicola, Amrine and Stasny (1994, 103).

A. cannabicola, Petanovic, Magud, and Smiljanic (2007, 81–85).

Material: 2 ♀♀ (Slides IR92-F14:1–2); *Cannabis sativa* L. (Cannabaceae); Ferdowsi (Islamiyeh), Iran; 25 August 2012. 2♀♀, 1 ♂ (Slide IR92-F14:3–5); the same host and locality; 3 September 2013.

Relation to host plant: This species was found as vagrant on leaves of hemp (*C. sativa*). It was first recorded on the same host in 1958 in Hungary and was described as *V. cannabicola* by Farkas (1960). Amrine and Stasny (1994) reassigned it to *Aculops*. Petanovic, Magud, and Smiljanic (2007) gave a supplementary description of the species. According to the latter, this mite is a serious pest of hemp. It primarily feeds on leaves, petioles and meristems and causes curling of leaf edges, followed by leaf russetting.

Distribution: Hungary, Poland, Serbia, Iran.

Aculus, Keifer (1959).

A. anthobius, Nalepa (1892).

Phyllocoptes anthobius, Nalepa (1891).

Material: 3 ♀♀ (Slides IR92-F5:1–3), *Galium verum* L. (Rubiaceae); Ferdows (BidsekanVillage); 25 August 2013. 5♀♀ (Slides IR92-F5:4–9); the same host and locality; 10 September 2013.

Relation to host plant: *A. anthobius* has been described from specimens collected from *G. verum* causing greening of blossoms. *Galium sylvaticum*, *G. uliginosum* and *G. boreale* (Amrine and Stasny 1994), *G. verum* Scop

and *G. rubioides* L. (Rancic and Petanovic 2002) were recorded as alternate hosts. *A. anthobius* causes leaf rolling of the host plant *Galium mollugo* (Rancic and Petanovic 2002). It is suggested that leaf rolling provides refuge for the reproduction and feeding of eriophyoids and very often mites establish prominent colonies within.

Distribution: Bosnia and Herzegovina, Denmark, Finland, France, Germany, Hungary, Italy, Russia, Sweden, Yugoslavia (www.faunaeur.org).

At least 127 eriophyoid species are now known from Iran, including the present four new records. It is expected that the number of known species belonging to the Iranian fauna will increase considerably with further research in different parts of the country.

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