

Research Article

Some edaphic mesostigmatic mites from Lordegan, Chaharmahal Bakhtiari province with their world distribution

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Abstract: Soil-dwelling mites and especially Gamasina (Mesostigmata) are very important to soil ecosystems. They are one of the major groups rich in species and abundance. In order to study mesostigmatic mite fauna, soil samples were collected from different oak forests of Lordegan region. The mites were extracted using Berlese-Tullgren funnels and then cleared in Lactic acid and mounted in Hoyer's medium. This study reports on the distribution of soil mesostigmatids in Iran and world-wide. Twenty species belonging to 13 genera of five families were collected and identified. Species are listed as follows:

Ascidae: *Arctoseius cetratus* (Sellnick, 1940), *Gamasellodes bicolor* (Berlese, 1918), *Antennoseius (Antennoseius) bacatus* Athias-Henriot, 1961, *Antennoseius (Antennoseius) masoviae* (Sellnick, 1943). Blattisociidae: *Lasioseius youcefi* Athias-Henriot, 1959. Laelapidae: *Cosmolaelaps rectangularis* Sheals, 1962, *Euandrolaelaps karawaiewi* (Berlese, 1903), *Gaeolaelaps aculeifer* (Canestrini, 1883), *Gaeolaelaps minor* (Costa, 1968), *Gaeolaelaps oreithyiae* (Walter & Oliver, 1989), *Haemolaelaps fenilis* (Megnin, 1875), *Haemolaelaps shealsi* (Costa, 1968), *Haemolaelaps schusteri* (Hirschmann, 1966), *Laelaspis kamalii* Joharchi and Halliday, 2012, *Laelaspis missouriensis* (Ewing, 1904), *Gymnolaelaps canestrinii* (Berlese, 1903), *Gymnolaelaps obscuroides* (Costa, 1968). Ologamasidae: *Sessiluncus hungaricus* Karg, 1964, *Allogamasellus* sp.; Veigaiidae: *Veigaia planicola* Berlese, 1882.

The genus *Allogamasellus* and *Haemolaelaps schusteri* are reported for the first time for Iranian mite fauna and the male of *Laelaspis kamalii* is reported for the first time for world fauna.

Keywords: Acari, Mesostigmata, Soil fauna, World distribution, Laelapidae

Introduction

The Mesostigmata, a large group of acarines, have great potential for biological control of pests, and as bioindicators of soil quality and sustainable agriculture and have successfully

adapted to a wide range of habitats (Beaulieu and Weeks, 2007; Salmane, 2000; Koehler, 1999). The majority of Mesostigmata are free-living (as predators) in soil and decaying organic matter. Many of them are adapted for life as parasites of vertebrates and invertebrates. This order is cosmopolitan in distribution (Evans and Till, 1979). They are very dynamic (mostly predators) and permanently in search of food and favorable habitats for their development (Manu, 2013).

Handling Editor: Mohammad Khanjani

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Received: 09 June 2015, Accepted: 24 August 2015

Published online: 02 October 2015

The species representing the families Laelapidae and Ascidae are most abundant in the oak forest soils. Laelapidae mites are diverse and consist of parasites of vertebrates, insect paraphages, and free-living predators that inhabit soil habitats (Strong and Halliday 1994; Krantz and Walter 2009).

The ascid mites are usually found in soil, litter and other habitats, and they play an important role as predators of other mites, arthropods and nematodes (Halliday *et al.*, 1998; Lindquist and Moraza, 2009; Walter, 1988; Walter *et al.*, 1993; Koehler, 1999). They are also effective as bio-control agents and indicators of changes in soil conditions and ecosystems (Karg and Freier, 1995; Mineiro *et al.*, 2009; Koehler, 1999).

The soil mesostigmatid species in oak forests in the southern parts of Chaharmahal Bakhtiari province (Lordegan region) and their world distribution are presented here. The genus *Allogamasellus* and *Haemolaelaps shusteri* are reported for the first time for Iranian mites fauna and the male of *Laelaspis kamalii* is reported for the first time for world fauna.

Materials and Methods

Materials were collected from April, 2013 to October, 2013 from different microhabitats in oak forests of Lordegan region Chaharmahal Bakhtiari province. Mites were extracted from the samples with Berlese-Tullgren funnels. The specimens were collected in beakers of 75% ethanol, cleared in lactic acid at 50 °C and then fixed on permanent slides in Hoyer's medium. The species are listed under their respective families and genera, including information about their world and Iran distribution and collection details in present research.

Results

Family Ascidae Oudemans, 1905

Genus *Arctoseius* Thor, 1930

Arctoseius cetratus (Sellnick, 1940)

World distribution: Israel (Costa, 1961, 1962, 1966); Slovakia (Kaluz and Fenda, 2005; Masan and Stanko, 2005; Fenda, 2010; Fenda and Schniererová, 2010; Masan, 2014); Poland (Seniczak *et al.*, 2000; Gwiazdowicz and Kmita, 2004; Kaczmarek and Marquardt, 2006; Gwiazdowicz, 2007; Gabrys *et al.*, 2008; Gwiazdowicz and Coulson, 2011; Gwiazdowicz and Dunlop, 2012); Greece (Hunter and Rosario, 1988); Russia (Marchenko and Mapyehko, 2002; Makarova, 2009; Makarova, 2011, 2013); Romania (Manu, 2010, 2013); Spain (Moraza and Peña, 2005); Hungary (Ripka *et al.*, 2005); England (Sheals, 1975; Binns, 1982; Perotti and Braig, 2009); Turkey (Çobanoglu, 2001; Kilic *et al.*, 2012); United States (Walter and Lindquist, 1995); Argentina (Bedano and Ruf, 2007); Canada (Berkett and Forsythe, 1980); Europe (Karg, 1993).

Former Iranian records: Mehrnejad, 2001; Hajizadeh *et al.*, 2010; Nemati *et al.*, 2012; Adeli *et al.*, 2013; Kadkhodae Eliaderani *et al.*, 2013; Kazemi and Alikhani, 2013; Kazemi and Rajaei, 2013; Farmahiny Farahani *et al.*, 2013; Khaleghabadian *et al.*, 2013; Hasanvand *et al.*, 2014; Khalili-Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Khanmirza region: 04.iv.2014, Salehat village (N 31° 32' 19", E 50° 57' 53"); Monj region: 20.iv.2014, Ghale madreseh village (N 31° 29' 12", E 50° 33' 17"), 03.v.2014, 05.x.2014, Pol borideh village (N 31° 33' 09", E 50° 40' 31").

Genus *Gamasellodes* Athias-Henriot, 1961

Gamasellodes bicolor (Berlese, 1918)

World distribution: United States (Baker *et al.*, 1976); Slovakia (Kaluz and Fenda, 2005; Fenda and Schniererova, 2010); Poland (Gwiazdowicz and Klemt, 2004; Gwiazdowicz and Matysiak, 2004; Gwiazdowicz *et al.*, 2006; Kaczmarek and Marquardt, 2006; Gwiazdowicz, 2007; Skorupski *et al.*, 2008; Błoszyk *et al.*, 2009; Gwiazdowicz *et al.*, 2011; Wojterska *et al.*, 2012); Turkey (Çakmak *et al.*, 2011); Spain (Moraza and Pena, 2005; Queralt-Azcona *et al.*, 2014); England (Skorupski and Luxton, 1998); Iraq (Souhaila, 1992).

Former Iranian records: Hadad Iraninezhad *et al.*, 2003; Darvishzadeh and Kamali, 2009; Naghibinejad *et al.*, 2011; Nemati *et al.*, 2012; Kadkhodae Eliaderani *et al.*, 2013; Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: 03.v.2014, 04.vi.2014, Khanmirza region: Salehat village (N 31° 32' 19", E 50° 57' 53"); Monj region: 04.vi.2014, Cheshmeh khani village (N 31° 30' 07", E 50° 35' 18"), 04.vi.2014, Joub nesa village (N 31° 29' 55", E 50° 38' 08").

Genus *Antennoseius* Berlese, 1916

(*Antennoseius* s. str. Berlese, 1916; *Vitzthumia* Thor, 1930)

Antennoseius (Antennoseius) bacatus Athias-Henriot, 1961

World distribution: Slovakia (Kaluz and Fenda, 2005); Poland (Gwiazdowicz and Kmita, 2004; Gwiazdowicz, 2007); Russia (Bregetova, 1977; Marchenko, 2012); Ukraine (Trach, 2013).

Former Iranian records: Arjomandi *et al.*, 2011; Kazemi *et al.*, 2011; Kazemi and Nosratpanah, 2011; Nemati *et al.*, 2012; Arjomandi *et al.*, 2013; Kazemi and Moraza 2013; Kavianpour *et al.*, 2013; Kazemi and Rajaei, 2013; Kazemi and Yazdanpanah, 2013; Hasanvand *et al.*, 2014; Khalili- Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Khanmirza region: 04.iv.2014, Salehat village (N 31° 32' 19", E 50° 57' 53"), 03.v.2014, Chahgah village (N 31° 32' 37", E 50° 57' 01"); Felard region: 25.iii.2014, Pol-e-Gharah (N 31° 14' 09", E 51° 13' 53"), 04.iv.2014, Poshtkouh (N 31° 14' 37", E 51° 12' 52"), 03.v.2014, Dalvara (N 31° 19' 03", E 51° 11' 17"); Monj region: 04.iv.2014, Goud sard (N 31° 27' 58", E 50° 33' 22"), 04.iv. 2014, Ghaleh madreseh (N 31° 30' 07", E 50° 35' 18"); Central region of Lordegan: 03.v.2014, Tang keloureh (N 31° 35' 40", E 50° 52' 15").

Antennoseius (Antennoseius) masoviae (Sellnick, 1943)

World distribution: Lindquist and Moraza, 2009; Russia (Bregetova, 1977) Europe (Karg, 1993); Poland (Gwiazdowicz, 2007).

Former Iranian records: Nemati *et al.*, 2012; Kazemi and Moraza, 2013; Kazemi and Rajaei, 2013; Khalili- Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Monj region: 04.iv.2014, Barz (N 31° 30' 13", E 50° 26' 07"), 03.v.2014, Showarz (N 31° 30' 28", E 50° 24' 11").

Family Blattisociidae Garman, 1948

Genus *Lasioseius* Berlese, 1916

Lasioseius youcefi Athias Henriot, 1959

Former Iranian records: Adeli *et al.*, 2013; Kadkhodae Eliaderani *et al.*, 2013; Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 25.iii.2014, 10.viii.2014, Salehat village (N 31° 32' 19", E 50° 57' 53").

Family Laelapidae Berlese, 1892

Genus *Cosmolaelaps* Berlese, 1903

Cosmolaelaps rectangularis Sheals, 1962

World distribution: South America (Sheals, 1962); Israel (Costa, 1968).

Former Iranian records: Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 03.v.2014, Salehat village (N 31° 32' 19", E 50° 57' 53"); Central region of Lordegan: 04.iv.2014, Tang keloureh (N 31° 33' 29", E 50° 52' 24").

Genus *Euandrolaelaps* Bregetova, 1977

Euandrolaelaps karawaiewi (Berlese, 1903)

World distributions: Israel (Costa, 1968); Israel, Kazakhstan, Latvia, Slovakia, Western Europe, Western Russia, Ukraine (Bregetova, 1977); Latvia (Salmane, 2001b).

Former Iranian records: Nemati *et al.*, 2000; Hajizadeh *et al.*, 2010; Moradian *et al.*, 2011; Cheraghali *et al.*, 2012; Granpayeh *et al.*, 2012; Khalili *et al.*, 2012; Khorsand *et al.*, 2012; Arjomandi *et al.*, 2013; Baroozeh *et al.*, 2013; Keshavarz Jamshidian and Babaeian, 2013; Kazemi and Rajaei, 2013; Heydari *et al.*, 2013; Khalili- Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Felard region: 25.iii.2014, 31.iii.2014, Pol-e- Gharah (N 31° 14' 09", E 51° 13' 53"),

08.iv.2014, 25.iv.2014, Poshtkouh (N 31° 14'37", E 51° 12'52").

Genus *Gaeolaelaps* Evans and Till, 1966

Gaeolaelaps aculeifer (Canestrini, 1883)

World distributions: Europe (Cooreman, 1959; Tenerio, 1982; Karg, 1993); England (Evans and Till, 1966); Europe (Bregetova, 1977); Norway (Mehl, 1979; Slomian *et al.*, 2005); Hawaiian Islands (Radovsky and Tenerio, 1981; Tenerio, 1982); Switzerland (Airoldi *et al.*, 1989); Asia, North and South America (Karg, 1993); England and Wales (Skorupski and Luxton, 1998); Latvia (Salmane, 1999, 2001a, 2001b, 2005); Poland (Gwiazdowicz *et al.*, 2000; Seniczak *et al.*, 2000; Gwiazdowicz and Matysiak, 2004; Gabrys *et al.*, 2008; Gwiazdowicz, 2008a, 2008b; Haitlinger, 2008); Hungary (Salmane and Kontschan, 2005a, 2005b); Slovakia (Masan and Stanko, 2005; Fenda and Schniererova, 2010); Finland (Huhta *et al.*, 2010); Austria (Wissuwa *et al.*, 2012); Spain (Beaulieu, 2009).

Former Iranian records: Nemati *et al.*, 2000; Kamali *et al.*, 2001; Babaeian *et al.*, 2010; Hajizadeh *et al.*, 2010; Alizadeh *et al.*, 2011; Bahrami *et al.*, 2011; Arabzadeh *et al.*, 2012; Daneshvar and Akrami, 2013; Hashemi Khabir *et al.*, 2013; Hamidi *et al.*, 2013; Majidi and Akrami, 2013; Keshavarz Jamshidian and Babaeian, 2013; Kazemi *et al.*, 2013; Kazemi and Rajaei, 2013; Kavianpour *et al.*, 2013; Baroozeh *et al.*, 2013; Heydari *et al.*, 2013; Khalili-Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Monj region: 25.iii.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 04.iv.2014, Cheshmeh khani village (N 31° 30'07", E 50° 35'18"), 03.v.2014, Joub nesa village (N 31° 29'55", E 50° 38'08"); Khanmirza region: 06.v.2014, Salehat village (N 31° 32'19", E 50° 57'53").

Gaeolaelaps minor (Costa, 1968)

World distributions: Israel (Costa, 1968); Turkey (Karg, 1993); Spain (Beaulieu 2009).

Former Iranian records: Haddad Irani-Nejad *et al.*, 2003; Pakyari *et al.*, 2008;

Babaeian *et al.*, 2010; Hajizadeh *et al.*, 2010; Cheraghali *et al.*, 2012; Ghasemimoghadam *et al.*, 2012; Baroozeh, *et al.*, 2013; Bazrafshan *et al.*, 2013; Heydari *et al.*, 2013; Kazemi and Alikhani, 2013; Kazemi and Rajaei, 2013; Kavianpour *et al.* 2013; Majidi and Akrami, 2013;

New records: Soil from different parts of oak forests: Khanmirza region: 06.ix.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Felard region: 04.viii.2014, 05.x.2014, Poshtkouh (N 31° 14'37", E 51° 12'52"), 14.vii.2014, Pol e Gharah (N 31° 14'09", E 51° 13'53").

Gaeolaelaps oreithyiae (Walter and Oliver, 1989)

World distribution: United States (Walter and Oliver, 1989); Canada (Beaulieu, 2009).

Former Iranian records: Kazemi and Rajaei, 2013; Kavianpour *et al.* 2013; Salehi *et al.*, 2014.

New records: Soil from different parts of oak forests: Khanmirza region: 9.v.2014, 16.v.2014, Salehat village (N 31° 32'19", E 50° 57'53").

Genus *Haemolaelaps* Berlese, 1910

Haemolaelaps fenilis (Megnin, 1875)

World distribution: North America (Strandtmann, 1963; Eads *et al.*, 1966); Bulgaria (Davidova and Vasilev, 2011); Australia (Domrow, 1980); Hawaiian Islands (Garrett and Haramoto, 1967).

Former Iranian records: Khaleghabadian *et al.*, 2013; Kazemi and Rajaei, 2013; Khalili-Moghadam and Saboori, 2015.

New records: Soil of different parts of oak forests: Felard region: 09.v.2014, Poshtkouh (N 31° 14'37", E 51° 12'52"), 16.v.2014, Pol e Gharah (N 31° 14'09", E 51° 13'53"); Khanmirza region: 16.v.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Monj region: 25.iii.2014, Ghale madreseh village (N 31° 29'12", E 50° 33'17"), 25.iii.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 09.iv.2014, 04.iv.2014, Cheshmeh khani village (N 31° 30'07", E 50° 35'18"), 03.v.2014, Joub nesa village (N 31° 29'55", E 50° 38'08").

Haemolaelaps schusteri (Hirschmann, 1966)

World distribution: Germany (Hirschmann, 1966).

New records: Soil from different parts of oak forests: Khanmirza region: 04.iv.2014, 03.v.2014, Salehat village (N 31° 32'19", E 50° 57'53").

Haemolaelaps shealsi (Costa, 1968)

World distribution: Israel (Costa, 1968).

Former Iranian records: Baroozeh, et al., 2013; Heydari et al., 2013; Kazemi and Rajaei, 2013; Ramroodi et al., 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 25.iii.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Monj region: 04.iv.2014, Ghale madreseh village (N 31° 29'12", E 50° 33'17"), 16.v.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 03.v.2014, Cheshmeh khani village (N 31° 30'07", E 50° 35'18"), 16.v.2014, Joub nesa village (N 31° 29'55", E 50° 38'08").

Genus *Laelaspis* Berlese, 1903

Laelaspis missouriensis (Ewing, 1904)

World distribution: Hawaiian Islands (Tenerio, 1982); United states (Willmann, 1951; Hunter, 1966); Europe: Western Europe (Bregetova, 1977); Austria, (Wissuwa et al., 2012); Latvia, (Salmane, 1999, 2001a, 2001b, 2007); Northern Caucasus (Bregetova, 1977); Poland, (Seniczak et al., 2000); Slovakia, (Masan and Stanko, 2005); Russia (Bregetova, 1977).

Former Iranian records: Bazrafshan et al., 2013; Keshavarz Jamshidian and Babaeian, 2013; Kazemi ad Rajaei, 2013; Khalili-Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Monj region: 25.iii.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 06.v.2014, Joub nesa village (N 31° 29'55", E 50° 38'08"); Khanmirza region: 25.iii.2014, Salehat village (N 31° 32'19", E 50° 57'53")

Laelaspis kamalii Joharchi and Halliday, 2012

Former Iranian records: Joharchi et al., 2012; Kazemi and Rajaei, 2013; Khalili- Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Khanmirza region: 04.iv.2014,

15.iv.2014, Salehat village (N 31° 32'19", E 50° 57'53").

Genus *Gymnolaelaps* Berlese, 1916

Gymnolaelaps canestrinii (Berlese, 1903)

World distribution: Italy (Berlese, 1903); Israel (Costa, 1962).

Former Iranian records: Joharchi and Halliday, 2013; Kazemi and Rajaei, 2013; Khalili- Moghadam and Saboori, 2015.

New records: Soil from different parts of oak forests: Khanmirza region: 25.iii.2014, 03.v.2014, Salehat village (N 31° 32' 19", E 50° 57'53"); Central region of Lordegan: 04.iv.2014, Abchenar Armand (N 31° 35'31", E 50° 49'54"), 06.v.2014, Pol-e-Armand (N 31° 40'43", E 50° 47'09").

Gymnolaelaps obscuroides (Costa, 1968)

World distribution: Israel (Costa, 1968).

Former Iranian records: Joharchi and Halliday, 2013; Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 09.v.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Central region of Lordegan: 14.v.2014, Bougar (N 31° 40'09", E 50° 44'22").

Family Ologamasidae Ryke, 1962

Genus *Sessiluncus* G. Canestrini, 1898

Sessiluncus hungaricus Karg, 1964

World distribution: Europe (Karg, 1993); Hungary, Israel (Bregetova, 1977).

Former Iranian records: Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 05.x.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Monj region: 14.v.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 04.vi.2014, Cheshmeh khani village (N 31° 30'07", E 50° 35'18").

Genus *Allogamasellus* Athias-Henriot, 1961

Allogamasellus sp.

World distribution: France (Athias-Henriot, 1961).

New records: Soil from different parts of oak forests: Felard region: 15.iv.2014, Poshtkouh (N 31° 14'37", E 51° 12'52"); Khanmirza region: 04.iv.2014, Salehat village (N 31° 32'19", E 50° 57'53").

Family Veigaiidae Oudemans, 1939Genus *Veigaia* Oudemans, 1905*Veigaia planicola* Berlese, 1882

World distribution: Spain (Moraza and Pena, 2005); Slovakia (Kaluz, 2008; Fenda, 2010); Italy (Akkerhuis *et al.*, 1988; Peverieri *et al.*, 2012); Sweden (Lundqvist, 1974); Hungary (Szabó *et al.*, 2009); England (Hurlbutt, 1968); Switzerland (Linder and Juvara-Bals, 2006); Turkey (Bayram and Çobanoğlu, 2005); England (Skorupski and Luxton, 1998); Germany (Koehler, 2000); USSR, Central Asia, Western Europe, USA, Crimea, Caucasus, (Bregetova, 1977); Europe (Karg, 1993); Spain, Southern Europe (Moraza, 2007).

Former Iranian records: Kazemi and Rajaei, 2013.

New records: Soil from different parts of oak forests: Khanmirza region: 03.v.2014, 05.viii.2014, Salehat village (N 31° 32'19", E 50° 57'53"); Monj region: 05.x.2014, Ghale madreseh (N 31° 30'07", E 50° 35'18"), 03.v.2014, Pol borideh village (N 31° 33'09", E 50° 40'31"), 04.vi.2014, 04.iv.2014, Cheshmeh khani village (N 31° 30'07", E 50° 35'18").

Discussion

The order Mesostigmata, which contains approximately 12,000 known species, is a large and highly diverse group (Krantz and Walter, 2009; Walter and Proctor, 1999). The Mesostigmata fauna of Iran consists of some 157 species assigned to 88 genera. The present sampling in oak forests of Lordegan recorded 20 species of Mesostigmata. The collected species of the families Laelapidae and Ascidae were the most abundant in the oak forest soils in this study. The mesostigmatid mites community and species composition associated with oak forests have been poorly studied. A survey of mesostigmatid mites of oak-hornbeam forest in Southwest Slovakia recorded 84 gamasid species, 25% belonged to three families Ascidae, Laelapidae and Veigaiidae (Fenda and Cicekova, 2009). A study on the pattern of microarthropod abundance in oak-hickory forests in southern

Ohio (USA) showed that mesostigmatid mites made up about 11% of total microarthropods (Dress and Boerner, 2004). Investigations on the mesostigmata soil mites from oak-hornbeam forests in southern Romania resulted in identification of 35 species included in 19 genera and 10 families (Manu and Onete, 2013).

In a study in agroecosystems in Central Argentina, 38 mesostigmatid species were recorded, 55% of which belonged to three families Ascidae, Laelapidae and Veigaiidae (Bedano and Ruf, 2007). Thirty nine percent of total 82 mesostigmatid species reported from some microhabitats in Poland were members of Ascidae and Laelapidae (Gwiazdowicz and Klemt, 2004). In oak forests of Iran the mite community knowledge is poorly developed. Hasanvand *et al.* (2014) have studied the fauna and diversity of mesostigmatid mites in different habitats such as oak forests in Khorramabad County and reported 18 species.

In this study the soil-inhabiting mesostigmatid mites of oak forests was surveyed in Lordegan region, one of the mountainous areas of the central plateau of Iran. These forests have a semi-Mediterranean climate and are classified as semiarid forests and sometimes referred to as the Zagros woodlands (Salehi *et al.*, 2013). In this study, 20 mite species of the order Mesostigmata were identified. The highest numbers of species were members of the families Ascidae and Laelapidae (80%). The genus *Allogamasellus* and *Haemolaelaps schusteri* are reported for the first time for Iranian mite fauna and the male of *Laelaspis kamalii* is reported for the first time.

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برخی از کنه‌های خاکزی راسته میان استیگمایان لردگان استان چهارمحال و بختیاری و پراکنش جهانی آنها

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دریافت: ۱۹ خرداد ۱۳۹۴؛ پذیرش: ۲ شهریور ۱۳۹۴

چکیده: کنه‌های خاکزی و مخصوصاً میان استیگمایان برای اکوسیستم‌های خشکی بسیار بااهمیت هستند. این کنه‌ها یکی از گروه‌های اصلی و با غنای گونه ای بالا و فراوانی زیاد می‌باشند. جهت بررسی فون کنه‌های میان استیگما، نمونه‌های خاک از مناطق مختلف جنگل‌های بلوط در ناحیه‌ی لردگان جمع‌آوری شدند. کنه‌ها توسط قیف‌های برلز استخراج شده و در اسید لاکتیک شفاف شده و در محیط هویر تثبیت شدند. در این مطالعه، انتشار کنه‌های میان استیگمای جمع‌آوری شده، در ایران و جهان ارائه شده است. بیست گونه متعلق به ۱۳ جنس و پنج خانواده جمع‌آوری و شناسایی شدند. لیست گونه‌ها بدین شرح است:

Ascidae: *Arctoseius cetratus* (Sellnick, 1940), *Gamasellodes bicolor* (Berlese, 1918), *Antennoseius (Antennoseius) bacatus* Athias-Henriot, 1961, *Antennoseius (Antennoseius) masoviae* Sellnick, 1943. Blattisociidae: *Lasioseius youcefi* Athias-Henriot, 1959. Laelapidae: *Cosmolaelaps rectangularis* Sheals, 1962, *Euandrolaelaps karawaiewi* (Berlese, 1903), *Gaeolaelaps aculeifer* (Canestrini, 1883), *Gaeolaelaps minor* (Costa, 1968), *Gaeolaelaps oreithyiae* (Walter & Oliver, 1989), *Haemolaelaps fenilis* (Megnin, 1875), *Haemolaelaps shealsi* (Costa, 1968), *Haemolaelaps schusteri* (Hirschmann, 1966), *Laelaspis kamalii* Joharchi and Halliday, 2012, *Laelaspis missouriensis* (Ewing, 1904), *Gymnolaelaps canestrinii* (Berlese, 1903), *Gymnolaelaps obscuroides* (Costa, 1968). Ologamasidae: *Sessiluncus hungaricus* Karg, 1964, *Allogamasellus* sp.; Veigaiidae: *Veigaia planicola* Berlese, 1882.

جنس *Allogamasellus* و گونه‌ی *Haemolaelaps schusteri* برای فون کنه‌های ایران و نر گونه‌ی

Laelaspis kamalii برای اولین بار گزارش می‌شود.

واژگان کلیدی: کنه‌ها، میان استیگمایان، فون خاک، پراکنش جهانی، لیلاییده