

ORIBATID MITES (ACARI: ORIBATIDA) OF JIROFT COUNTY, KERMAN PROVINCE, IRAN: INTRODUCTION OF FIFTY-SIX SPECIES, NEW RECORDS FOR THE FAUNA OF THE PROVINCE

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ABSTRACT: During 2015-16, fauna of oribatid mites (Acari: Oribatida) in Jiroft County (Kerman Province, southeast Iran) was studied. Totally, 81 species belonging to 61 genera and 41 families were collected and identified. Of which, one genus and one species are reported for the first time from Iran and one species from Asia. Fifty-six species are reported for the first time from Kerman Province and all species are new for the county.

KEY WORDS: Mite, Oribatida, Kerman, Iran, fauna

Oribatid mites (superorder Acariformes; order Sarcoptiformes; suborder Oribatida), commonly known as beetle mites or armored mites, were formerly called the Cryptostigmata. They range in size from 200 to 1400 micrometers, comprise more than 11,000 named species and subspecies (excluding members of the cohort Astigmatina) representing 163 families. Most oribatid mites inhabit the soil-litter system, although many are arboreal and a few are aquatic. They are often the dominant arthropods in highly organic soils and mostly known as saprophages and mycophages and some are predators of soil microorganisms such as nematodes. Oribatid mites actively involved in decomposition of organic matters and their roles as vector of tapeworms (Cestoda) and bioindicator in ecotoxicological experiments are remarkable (Denegri, 1993; Lebrun & van Straalen, 1995; Norton & Behan-Pelletier, 2009; Subias, 2018).

Kerman is one of the few completely uninvestigated provinces of Iran in relation to the taxonomic study on its oribatid mite fauna and only fourteen species reported from this wide province (Akrami, 2015; Kun & Latifi, 2016). During 2015- 2016, oribatid mite fauna of Jiroft County in Kerman Province was studied. Kerman Province is situated in southeast Iran (Figure 1), to the southwest of the Kavir-e Lut (Desert), covering an area of 182,000 km² (70,000 square miles). Kerman is the largest province in Iran, constituting 11 percent of its area. The province lies between latitudes 26°29' and 31°58' north and longitudes 54°20' and 59°34' east. The province is bounded in the southwest by Hormozgan and Fars Provinces, in the northwest and north by Yazd Province, in the northeast by Southern Khorasan Province, and in the east by Sistan va Baluchestn Province. One of the counties of Kerman Province is Jiroft, that is located 230 kilometres (140 mi) south of the city of Kerman (capital of Kerman Province). In the past it was also called Sabzevaran, and on account of its being very fertile land it is famous as Hend-e-Koochak (the little India). Jiroft is located in a vast plain, Halil River (Halilrood), on the southern outskirts of the Jebal Barez Mountain chain, surrounded by two rivers. The mean elevation of the city is about 650 meters above sea level. The weather of the city is very warm in summer and it is one of the hottest places in Iran, and temperatures are moderate in winter. There is a

large dam (Jiroft Dam) upstream the city on the Halil River, irrigates 14200 hectares of the downstream lands.

No information was available on the oribatid fauna of Jiroft before this research, and the present study is the first work to identify the oribatid mites in this area.

MATERIALS AND METHODS

Soil and litter samples were taken from different locations of Jiroft, during 2015- 2016, and were transferred to the Acarological laboratory of the College of Agriculture, Shiraz University. The mites were extracted by Berlese funnel. Oribatid mites were removed, cleared in lactophenol and mounted in Hoyer's medium on glass microscope slides for identification. The slides were placed in an oven at 45°C for two weeks and then the specimens were examined using a light microscope (Zeiss Standard 20). All specimens deposited in the Acarological Collection of the Department of Plant Protection, School of Agriculture, Shiraz University, Iran.

RESULTS

During this study, 81 species belonging to 61 genera and 41 families of oribatid mites from various habitats of Jiroft County were collected and identified, of which one genus and one species are reported for the first time from Iran and one species for Asia, and 34 families, 53 genera and 56 species are reported for the first time from Kerman Province.

List of species according to their families is as follows:

Eniochthoniidae Grandjean, 1947

***Hypochthoniella minutissima* (Berlese, 1903)**

Sample code: D1-6. (refer to Table 1 for sampling information)

Distribution: Cosmopolitan (except Antarctic) (Subías, 2018); Iran: Mazandaran Province (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Cosmochthoniidae Grandjean, 1947

***Cosmochthonius* (*Cosmochthonius*) *reticulatus* Grandjean, 1947**

Sample code: S1-1.

Distribution: southern Palaearctic, Oriental (south-east China and India: west Bengal) and Neotropical (Brazil and Cuba) (Subías, 2018); Iran: Fars (Ebrahimi & Akrami, 2015; Iranpoor & Akrami, 2016) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

***Cosmochthonius* (*Cosmochthonius*) *zanini* Penttinen & Gordeeva, 2003**

Sample code: S1-1, S2-3.

Distribution: eastern Mediterranean and Iran (Subías, 2018); Iran: Fars Province (Iranpoor & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Sphaerochthoniidae Grandjean, 1947

***Sphaerochthonius splendidus* (Berlese, 1904)**

Sample code: S1-2.

Distribution: Pantropical: Oriental (southeast China and Vietnam), Australian (Australia and Polynesia), Neotropical, Ethiopian, and Subtropical (southern Holarctic) (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Brachychthoniidae Thor, 1934***Sellnickochthonius* sp. nr. *gracilis* (Chinone, 1974) (*Brachychthonius*)**

Sample code: J2-1, J2-2, J3-1, J4-1, J4-2, KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20.

Epilohmanniidae Oudemans, 1923***Epilohmannia* (*Epilohmannia*) *cylindrica cylindrica* (Berlese, 1904)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-1, J4-2, J3-1, J2-1.
Distribution: Cosmopolitan (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

***Epilohmannia* (*Epilohmannia*) sp. nr. *styriaca* Schuster, 1960**

Sample code: T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-1, KH1-20, J4-2, J3-1, J2-1.

Lohmanniidae Berlese, 1916***Cryptacarus promecus* Grandjean, 1950**

Sample code: S3-1, S3-2, S3-3, S3-4, S3-5, S3-6, S4-1, S4-2, S4-3.
Distribution: southern Palaearctic (Mediterranean and west-central Asia) and Ethiopian (Subías, 2018); Iran: Fars and Khuzestan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Papillacarus* (*Papillacarus*) *aciculatus* (Berlese, 1904)**

Sample code: KH1-20, T1-20, A1-20, J2-1, D1-3, D1-8, J4-1, J4-2.
Distribution: southern Palaearctic, western Palaearctic (except north) and Vietnam and Iran (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Lohmannia* (*Lohmannia*) *paradoxa* (Haller, 1884)**

(= *L. loebli* Mahunka, 1974)

Sample code: KH1-20, T1-20, SH1-20, ME1-20, A1-20, J3-1, J2-1.
Distribution: western Palaearctic (Mediterranean and Germany) and Iran (Subías, 2018); Iran: Yazd, Esfahan, East Azarbaijan, Fars (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

***Heptacarus supertrichus* Piff, 1967**

Sample code: D1-4, D1-6, D1-7, D1-8.
Distribution: southern Palaearctic: Mediterranean (Iraq and Tunisia) and Iran, and northern Neotropical (Subías, 2018); Iran: Fars Province (Ebrahimi & Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Thamnacarus longisetosus* Bulanova-Zachvatkina, 1978**

Sample code: S3-1, S3-2, S3-3, S3-4, S3-5, S3-6, S4-1, S4-2.
Distribution: southern Palaearctic (Subías, 2018); Iran: Fars Province (Ebrahimi & Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Perlohmanniidae Grandjean, 1954***Perlohmannia* (*Perlohmannia*) *dissimilis* (Hewitt, 1908)**

Sample code: D1-2.
Distribution: Palaearctic (south-central Europe, west-central Asia and east of Asiatic Russia) and Hawaii (Subías, 2018); Iran: Gilan (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Euphthiracaridae Jacot, 1930***Acrotritia sinensis* Jacot, 1923**

Sample code: T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-1, KH1-20.
Distribution: Pantropical (excluding Neotropical) and Subtropical (southern Palaearctic) (Subías, 2018); Iran: Khuzestan Province (Akrami, 2015).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

Phthiracaridae Perty, 1841***Phthiracarus (Phthiracarus) lentulus (Koch, 1841)***

Sample code: KH1-20, T1-20, SH1-20, D1-1, D1-3, D1-9, S3-8.

Distribution: Holarctic (Palaeartic and Nearctic) and Ethiopian (Angola and Madagascar) (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Notophthiracarus pavidus (Berlese, 1913)

Sample code: KH1-20, T1-20, SH1-20, A1-20, D2-1, S3-7.

Distribution: southern Palaeartic and India (Subías, 2018); Iran: Mazandaran (Akrami, 2015) and Fars (Iranpoor & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Atropacarus striculus (Koch, 1835)

Sample code: D1-9, D1-1, D1-2, D1-3, D1-4, D1-6, D1-7, D1-8.

Distribution: semicosmopolitan (Holarctic, Oriental, Central America, Australian and Madagascar) (Subías, 2018); Iran: Mazandaran, East Azarbaijan, Fars (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Nothridae Berlese, 1896***Nothrus anauniensis Canestrini & Fanzago, 1877***

Sample code: S3-1, S3-2, S3-4, S3-5, S3-8, M1-1, M1-2.

Distribution: cosmopolitan (except Antarctic): common in Palaeartic (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

Nothrus perezinigoï Mahunka, 1980

Sample code: D2-1, KH1-20, T1-20, M1-20, H1-20, ME1-20, A1-20, S1-4, J1-1.

Distribution: Holarctic (central-western Europe and east of U.S.A.) (Subías, 2018).

Notes: This is the first record of this species for Asia.

Crotoniidae Thorell, 1876***Camisia (Camisia) horrida (Hermann, 1804)***

Sample code: S1-1, S1-2, S1-3, S3-9, M1-2, M1-3, S2-6.

Distribution: Holarctic, north of Oriental, Ethiopian (Ethiopia) and north of Neotropical (Subías, 2018); Iran: Alborz, Fars (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Hermanniellidae Grandjean, 1934***Hermanniella picea (Koch, 1839)***

(= *H. punctulata* Berlese, 1908)

Sample code: KH1-20, T1-20.

Distribution: Holarctic (Palaeartic and U.S.A.: Virginia) and Oriental (Subías, 2018); Iran: Fars Province (Akrami & Behmanesh, 2015).

Notes: This is the first record of this species for Kerman Province.

Neoliodidae Sellnick, 1928***Porliodes farinosus (Koch, 1839)***

Sample code: S2-3.

Distribution: Palaeartic (frequent in western Palaeartic) and Nepal (Subías, 2018).

Notes: This is the first record of the genus and species for Iran.

Licnodamaeidae Grandjean, 1954***Licnodamaeus sp. nr. pulcherrimus (Paoli, 1908)***

Sample code: M1-4, M1-5, M1-3, M1-4, M1-5.

Licnodamaeus sp.

Sample code: M1-1, M1-3, M1-4.

Licnobelbidae Grandjean, 1965
***Licnobelba latiflabellata* (Paoli, 1908)**

(= *L. alestensis* Grandjean, 1931)

Sample code: KH1-20, T1-20, SH1-20, ME1-20, A1-20.

Distribution: western Palaearctic (except north) and west of eastern Palaearctic (Subías, 2018); Iran: Mazandaran, Golestan, Fars (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Gymnodamaeidae Grandjean, 1954
***Jacotella frondeus* (Kulijev, 1979)**

(= *Plesiodamaeus ornatus* Mahunka, 1979)

Sample code: M1-4, M1-5, S3-1, S3-7.

Distribution: eastern Mediterranean and Iran (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Aleurodamaeidae Paschoal & Johnston, 1985
***Aleurodamaeus* sp.**

Sample code: S2-1, S2-2.

Damaeidae Berlese, 1896
***Belba* (*Belba*) *dubinini* Bulanova-Zachvatkina, 1962**

Sample code: S4-1, S4-2, S4-3.

Distribution: Palaearctic (central-eastern Europe and eastern Palaearctic) (Subías, 2018); Iran: Fars Province (Iranpoor & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Zetorchestidae Michael, 1898
***Zetorchestes* sp. nr. *phyllosetus* Mahunka, 1977**

Sample code: S2-3, S2-4.

Eremaeidae Oudemans, 1900
***Eueremaus* sp. nr. *foveolatus* (Hammer, 1952)**

Sample code: D1-4, S1-3.

Damaeolidae Grandjean, 1965
***Fosseremus laciniatus* (Berlese, 1905)**

(= *F. quadripertitus* Grandjean, 1965)

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-2, J4-1, J3-1, J2-2, J1-2.

Distribution: cosmopolitan (except Antarctic) (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Oppiidae Sellnick, 1937
***Lasiobelba* (*Lasiobelba*) *pori* (Vasiliu & Ivan, 1995)**

(= *L. neonominata* Subías, 2004)

Sample code: S2-5, S2-7, S3-6, S4-1, D1-4.

Distribution: southern Palaearctic (Mediterranean and Iran), Ethiopian and Hawaii (Subías, 2018); Iran: Mazandaran, Khuzestan, Alborz and Fars Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Graptoppia* (*Graptoppia*) *sundensis acuta* Ayyildiz, 1989**

Sample code: D1-3, D1-8.

Distribution: eastern Mediterranean and Iran (Subías, 2018); Iran: East Azarbaijan (Akrami, 2015) and Fars (Iranpoor & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

***Ramusella* (*Ramusella*) sp. nr. *persica* Akrami, Behmanesh & Subías, 2015**
 Sample code: S4-2, S4-3.

***Ramusella (Ramusella) puertomontensis* Hammer, 1962**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J2-1

Distribution: Tropical (India: West Bengal, Melanesia: I. Fiji, and Neotropical: Chile and Brazil) and Subtropical: southern Palaearctic (Mediterranean, Iran and east of Asian Russia) (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

***Ramusella (Ramusella) sp. nr. sengbuschi* Hammer, 1968**

Sample code: S4-2, S4-1.

***Ramusella (Rectoppia) damavandica* Akrami & Subías, 2008**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J3-1

Distribution: Iran (Subías, 2018): many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Multioppia (Hammeroppia) wilsoni laniseta* Moritz, 1966**

Sample code: D1-4, D1-6, D1-8.

Distribution: western Palaearctic, eastern Palaearctic (except East), U.S.A. and Neotropical (Venezuela and Cuba) (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Anomaloppia iranica* Bayartogtokh & Akrami, 2000**

Sample code: S3-3, S3-4, S3-5, S3-8, S3-9.

Distribution: Iran (Akrami et al., 2015): Yazd, Alborz, East Azarbaijan, Zanjan (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

***Anomaloppia mazandranica* Akrami & Subías, 2007**

Sample code: S3-3, S3-4, S3-5, S3-8, S3-9.

Distribution: southern Palaearctic (Caucasus and Iran) (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Discoppia (Cylindroppia) cylindrica* (Pérez-Íñigo, 1965)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-2, J4-1, J3-1, J1-1, J1-2.

Distribution: southern Palaearctic, Oriental and Central America (Subías, 2018); Iran: Mazandaran, Khuzestan and Fars Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Oxyoppia (Oxyoppiella) sp.

Sample code: A3, A4, A13, A14, A20, B1, B3.

***Rhinoppia (Rhinoppia) obsoleta* (Paoli, 1908)**

Sample code: D1-4, D1-2, S2-8, S3-2, S3-4.

Distribution: Palaearctic (excluding eastern Palaearctic), Greenland and Australian (New Zealand and Hawaii) (Subías, 2018); Iran: Mazandaran, Alborz, East Azarbaijan and Fars Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Rhinoppia (Rhinoppia) subpectinata* (Oudemans, 1900)**

Sample code: S3-5, S3-3, D1-8, D1-4.

Distribution: Holarctic: except east of eastern Palaearctic (common in western Palaearctic) and Senegal (Subías, 2018); Iran: Mazandaran, Gilan, Alborz, East Azarbaijan (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

***Oppiella (Oppiella) nova* (Oudemans, 1902)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, S3-1, S3-2.

Distribution: cosmopolitan (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

Suctobelbidae Jacot, 1938***Suctobelbella (Suctobelbella) italica* (Mahunka, 1966)**

(=*Suctobelbella diffissa* Moritz, 1974)

Sample code: D1-4.

Distribution: Palaearctic: western Palaearctic (except north) and Iran (Subías, 2018); Iran: Mazandaran Province (Akrami & Mortazavi, 2016).

Notes: This is the first record of this species for Kerman Province.

***Suctobelba aliena* Moritz, 1970**

Sample code: S4-3.

Distribution: Europe and Iran (Subías, 2018); Iran: East Azarbaijan Province (Mirzaie & Akrami, 2012).

Notes: This is the first record of this species for Kerman Province.

Carabodidae Koch, 1837***Carabodes* sp.**

Sample code: S4-3.

Tectocephidae Grandjean, 1954***Tectocephus velatus* (Michael, 1880)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, S4-1, J3-1, M1-2, S3-8, S3-4, S3-2, S2-7, S2-4, D1-7, S1-2.

Distribution: cosmopolitan (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

Compactozetidae Luxton, 1988***Eupterotegaeus ornatissimus* (Berlese, 1908)**

Sample code: S1-1.

Distribution: Holarctic (southern Palaearctic, I. Sakhalin, and Canada) (Subías, 2018); Iran: West Azarbaijan Province (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Amerobelbidae Grandjean, 1961***Amerobelba* sp.**

Sample code: KH1-20, ME1-20.

Passalozetidae Grandjean, 1954***Passalozetes (Passalozetes) africanus* Grandjean, 1932**

Sample code: D1-4.

Distribution: south-central Palaearctic and Equatorial, Guinea (Subías, 2018); Iran: Mazandaran, Yazd, Fars, Zanjan and East Azarbaijan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Microzetidae Grandjean, 1936***Berlesezetes brazilozetoides* Balogh & Mahunka, 1981**

Sample code: KH1-20, T1-20, A1-20.

Distribution: Neotropical; India (Kerala) and Iran (Subías, 2018); Iran: Ardabil, East Azarbaijan (Akrami, 2015) and Fars (Iranpoor & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Achipteriidae Thor, 1929***Parachipteria* sp.**

Sample code: S2-2, S2-3.

Ceratozetidae Jacot, 1925***Euzetes globulus* (Nicolet, 1855)**

Sample code: J1-2, D1-1.

Distribution: Palaearctic (western and eastern Palaearctic) and Neotropical (Argentina) (Subías, 2018); Iran: East Azarbaijan Province (Azimi et al., 2017).

Notes: This is the first record of this species for Kerman Province.

Chamobatidae Thor, 1937***Chamobates (Xiphobates) sergienkoeae* Shaldybina, 1980**

Sample code: KH1-20, T1-20, M1-20.

Distribution: southern Palaearctic (Mediterranean and Iran) (Subías, 2018); Iran: Mazandaran, Gilan (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Punctoribatidae Thor, 1937

***Punctoribates (Punctoribates) liber* Pavlitschenko, 1991**

Sample code: S4-1, S4-2, S4-3.

Distribution: southern Palaearctic (Mediterranean and Iran) (Subías, 2018); Iran: Mazandaran, Gilan, Fars and East Azarbaijan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Zetomotrichidae Grandjean, 1934

***Zetomotrichus (Zetomotrichus) persicus* Akrami & Behmanesh, 2013**

Sample code: S4-1, S4-2, S3-8, D1-4.

Distribution: Iran (Subías, 2018): Kohgiluyeh va Boirahmad and Fars Provinces (Akrami, 2015)

Notes: This is the first record of this species for Kerman Province.

***Zetomotrichus (Zetomotrichus) lacrimans* Grandjean, 1934**

Sample code: S4-1, S4-2, S3-8, D1-4.

Distribution: southern Palaearctic (Mediterranean and Iran) and Tropical: Ethiopian (South Africa and Ethiopia), Philippines and Cuba (Subías, 2018); Iran: Markazi, Fars and Khuzestan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Ghilarovus hispanicus hispanicus* Subías & Pérez-Íñigo, 1977**

Sample code: S1-4, S1-3.

Distribution: southern Palaearctic (Spain, Caucasus and Iran) (Subías, 2018); Iran: Fars Province (Ebrahimi & Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Oribatulidae Thor, 1929

***Oribatula (Oribatula) tibialis tibialis* (Nicolet, 1855)**

Sample code: D1-9, J1-1, J1-3, J2-2, J3-1.

Distribution: Holarctic, India (Sikkim) and northern Neotropical (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

***Oribatula (Oribatula) tibialis caliptera* Berlese, 1902**

(= *Oribatula (O.) tibialis allifera* Subías, 2000)

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-1, J2-1.

Distribution: Holarctic (Mediterranean, Iran and northern Nearctic). (Subías, 2018); Iran: Mazandaran, Gilan and East Azarbaijan Provinces (Akrami, 2015).

Notes: This is the first record of this subspecies for Kerman Province.

***Oribatula (Zygoribatula) exarata* Berlese, 1916**

Sample code: S3-2, S3-3, D1-7, M1-2.

Distribution: southern Palaearctic (Subías, 2018); Iran: Mazandaran, Gilan and Razavi Khorasan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Oribatula (Zygoribatula) connexa* Berlese, 1904**

Sample code: S3-7, S2-3, S2-5, D1-6, D2-1.

Distribution: Subtropical (Austral and southern Palaearctic) (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Oribatula (Zygoribatula) undulata* Berlese, 1916**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, S3-4, D1-3.

Distribution: Pantropical (except Neotropical) and Subtropical (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

***Oribatula (Zygoribatula) skrjabini* (Bulanova-Zachvatkina, 1967)**

Sample code: D1-3.

Distribution: southern Palaearctic (eastern Mediterranean and central-western Asia) (Subías, 2018); Iran: Mazandaran, Markazi, Fars, Zanjan, East Azarbaijan (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

Schelorbitidae Grandjean, 1933

***Schelorbites (Schelorbites) fimbriatus* Thor, 1930**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, D1-2, S3-4.

Distribution: Pantropical and Subtropical (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: This is the first record of this species for Kerman Province.

***Schelorbites (Schelorbites) praeincisus* (Berlese, 1910)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, S3-5, D1-7, S3-3, J4-2, S4-2, S1-2.

Distribution: Tropical (Oriental, Pacific Islands, Ethiopian (Ethiopia and Cameroon) and Neotropical) and southern Holarctic (Egypt, Iran and U.S.A.: Texas) (Subías, 2018); Iran: Yazd, Bushehr, Mazandaran, Gilan, Fars and Zanjan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Schelorbites (Schelorbites) sp.1

Sample code: S3-4.

Schelorbites (Schelorbites) sp.2

Sample code: S2-7.

Protorbitidae J. & P. Balogh, 1984

***Protorbites (Protorbites) paracapucinus* (Mahunka, 1988)**

Sample code: S3-3, S3-5, S3-8.

Distribution: Oriental, eastern Palaearctic (Iran), Ethiopian (Congo and Cameroon), Neotropical and Australiana (New Hebrides [Vanuatu]) (Subías, 2018); Iran: many provinces (Akrami, 2015; Farzaneh & Akrami, 2016).

Notes: Previously cited for Kerman Province by Kun & Latifi (2016).

Haplozetidae Grandjean, 1936

***Indorbites (Haplozetes) fusifer* (Berlese, 1908)**

Sample code: KH1-20, T1-20, M1-20, SH1-20, ME1-20, A1-20, J4-1.

Distribution: southern Palaearctic (Mediterranean and Iran) and India (Tripura) (Subías, 2018); Iran: western Iran and Hamadan, Fars, Zanjan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Pelorbites sp.

Sample code: S3-3, S3-5, S3-8.

Galumnidae Jacot, 1925

***Acrogalumna lanceolata* Bayartogtokh & Akami, 2014**

Sample code: D1-4.

Distribution: Iran (Subías, 2018): Mazandaran, Fars (Akrami, 2015) and Razavi Khorasan (Farzaneh & Akrami, 2016) Provinces.

Notes: This is the first record of this species for Kerman Province.

***Allogalumna sp. nr. pellucida* Wallwork, 1965**

Sample code: S1-3.

***Allogalumna dentirostrata* Bayartogtokh & Akrami, 2014**

Sample code: D1-1.

Distribution: Iran (Subías, 2018): Mazandaran and Fars Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Galumna (Galumna) iranensis* Mahunka & Akrami, 2001**

Sample code: S2-8.

Distribution: Iran (Subías, 2018): Yazd, Khuzestan, Mazandaran, East Azarbaijan, Fars and Zanjan Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Galumna (Galumna) karajica* Mahunka & Akrami, 2001**

Sample code: S1-2, S1-3, J1-3.

Distribution: Iran and Caucasus (Subías, 2018); Iran: many provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

***Galumna (Galumna) flabellifera* Hammer, 1958**

Sample code: S3-2.

Distribution: Pantropical and Subtropical (Subías, 2018); Iran: Alborz Province (Akrami & Keshavarz Jamshidian, 2019).

Notes: This is the first record of this species for Kerman Province.

***Pilogalumna tenuiclava* (Berlese, 1908)**

(= *Allogalumna boeivi* Krivolutskaja, 1952)

Sample code: S2-6, S3-3.

Distribution: Holarctic (Subías, 2018); Iran: Yazd, Fars and Markazi Provinces (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Parakalummidae Grandjean, 1936***Neoribates (Neoribates) granulatus* Akrami & Behmanesh, 2012**

Sample code: S2-8.

Distribution: Iran (Subías, 2018): Fars Province (Akrami, 2015).

Notes: This is the first record of this species for Kerman Province.

Phenopelopidae Petrunkevitch, 1955***Eupelops* sp. nr. *acromios* (Hermann, 1804)**

Sample code: D1-3.

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Table 1. Sampling information.

Code	Latitude		Longitude		Altitude (m)	Habitat (soil of)	Sampling date	Sampling location	
	Degree	Minutes	Degree	Minutes					
S1-1	28	43	57	35	2745	Sour cherry <i>Prunus</i> sp.	5.V.2015	Garden	Sarbizhan
S1-2	28	07	57	32	2811	Juniper <i>Juniperus</i> sp.	5.V.2015	Hillside	Sarbizhan
S1-3	28	07	57	33	2807	<i>Juniperus</i> sp.	5.V.2015	Hillside	Sarbizhan
S1-4	28	07	57	31	2795	Walnut <i>Juglans</i> sp.	5.V.2015	Hillside	Sarbizhan
J1-1	28	38	57	46	565	Alfalfa <i>Medicago sativa</i>	5.V.2015	Farm	Jiroft
J1-2	28	32	57	35	567	Date palm <i>Phoenix dactylifera</i>	5.V.2015	Farm	Jiroft
J1-3	28	32	57	35	567	Persian clover <i>Trifolium resupinatum</i>	5.V.2015	Farm	Jiroft
D1-1	28	38	57	46	1915	Plane <i>Platanus orientalis</i>	7. VI. 2015	Garden	Dalfard
D1-2	28	38	57	46	1910	Fig <i>Ficus carica</i>	7. VI. 2015	Garden	Dalfard
D1-3	28	32	57	35	1910	Mulberry <i>Morus</i> sp.	7. VI. 2015	Garden	Dalfard
D1-4	28	00	57	35	1917	Mount Atlas pistache <i>Pistacia atlantica</i>	7. VI. 2015	Hillside	Dalfard
D1-6	28	57	57	39	1529	Orange tree <i>Citrus sinensis</i>	7. VI. 2015	Garden	Dalfard
D1-7	28	57	57	38	1713	<i>Prunus</i> sp.	7. VI. 2015	Hillside	Dalfard
D1-8	28	57	57	37	1645	Poppy <i>Papaver</i> sp.	7. VI. 2015	Raz Shirin Valley	Dalfard
D1-9	28	58	57	38	1719	<i>Ficus carica</i>	7. VI. 2015	Hillside	Dalfard
S2-1	28	11	57	23	2587	<i>Prunus</i> sp.	12.VII. 2015	Garden	Polpiran
S2-2	28	11	57	23	2587	Apricot tree <i>Prunus</i> sp.	12.VII. 2015	Garden	Polpiran
S2-3	28	14	57	20	2638	White poplar <i>Populus alba</i>	12.VII. 2015	Garden	Darb Behesht
S2-4	28	13	57	22	2564	<i>Prunus persica</i>	12.VII. 2015	Garden	Darb Behesht
S2-5	28	06	57	31	2846	Daffodil <i>Narcissus</i> sp.	12.VII. 2015	Hillside	Darb Behesht
S2-6	28	06	57	32	2935	<i>Juniper</i> sp.	12.VII. 2015	Hillside	Sarbizhan
S2-7	28	06	57	33	2955	Berberry <i>Berberis</i> sp.	12.VII. 2015	Hillside	Sarbizhan
S2-8	28	06	57	33	2969	Willow <i>Salix</i> sp.	12.VII. 2015	Garden	Sarbizhan
S3-1	28	38	57	09	1767	Weeds	4. VIII. 2015	Around the river	Sargaz
S3-2	28	38	57	09	1767	Common reed <i>Phragmites australis</i>	4. VIII. 2015	Around the river	Sargaz
S3-3	28	38	57	09	1767	<i>Salix</i> sp.	4. VIII. 2015	Garden	Sargaz
S3-4	28	38	57	09	1767	Chirst's thorn <i>Ziziphus spina-chirsti</i>	4. VIII. 2015	Garden	Sargaz
S3-5	28	38	57	09	1767	Apple tree <i>Malus</i> sp.	4. VIII. 2015	Garden	Sargaz
S3-6	28	38	57	09	1767	Pomegranate <i>Punica granatum</i>	4. VIII. 2015	Garden	Sargaz

S3-7	28	38	57	08	1772	<i>Prunus</i> sp.	9. VIII. 2015	Garden	Esfandagheh
S3-8	28	38	57	08	1772	Apricot tree	9. VIII. 2015	Garden	Esfandagheh
S3-9	28	38	57	18	1837	Harmel peganum	9. VIII. 2015	Hillside	Esfandagheh
J2-1	28	38	57	47	640	<i>Peganum harmala</i>	14. VIII. 2015	Farm	Jiroft
J2-2	28	36	57	49	653	<i>Medicago sativa</i>	14. VIII. 2015	Farm	Jiroft
M1-1	28	52	57	52	1866	<i>Prunus</i> sp.	19. IX. 2015	Hillside	Jabalbarez
M1-2	28	52	57	52	1866	Locoweed	19. IX. 2015	Hillside	Jabalbarez
M1-3	28	52	57	52	1866	<i>Astragalus</i> sp.	19. IX. 2015	Forest Park	Jabalbarez
M1-4	28	52	57	52	1866	Weeds	19. IX. 2015	Forest Park	Jabalbarez
M1-5	28	52	57	52	1866	<i>Phragmites australis</i>	19. IX. 2015	Forest Park	Jabalbarez
J3-1	28	35	57	51	667	<i>Tamarix</i> sp.	8. XI. 2015	Garden	Dosari
J4-1	28	44	57	39	827	<i>Citrus sinensis</i>	4. XII. 2015	Road	Jiroft
J4-2	28	44	57	39	827	<i>Tamarix</i> sp.	4. XII. 2015	Road	Jiroft
S4-1	28	38	57	09	1767	<i>Ziziphus spinachristi</i>	3. IV. 2016	Around the river	Sargaz
S4-2	28	38	57	09	1767	<i>Tamarix</i> sp.	3. IV. 2016	Garden	Sargaz
S4-3	28	38	57	09	1767	<i>Salix</i> sp.	3. IV. 2016	Garden	Sargaz
D2-1	28	00	57	35	1917	<i>Ficus carica</i>	5. V. 2016	Hillside	Dalfard
KH1-20	28	38	57	46	649	<i>Pistacia atlantica</i>	4. VI. 2016	Farm	Sarjaz
T1-20	28	38	57	46	649	<i>Medicago sativa</i>	6. VII. 2016	Farm	Sarjaz
M1-20	28	38	57	46	649	<i>Medicago sativa</i>	5. VIII. 2016	Farm	Sarjaz
SH1-20	28	38	57	46	649	<i>Medicago sativa</i>	5. IX. 2016	Farm	Sarjaz
ME1-20	28	38	57	46	649	<i>Medicago sativa</i>	8. X. 2016	Farm	Sarjaz
A1-20	28	38	57	46	649	<i>Medicago sativa</i>	8. XI. 2016	Sarjaz	Jiroft

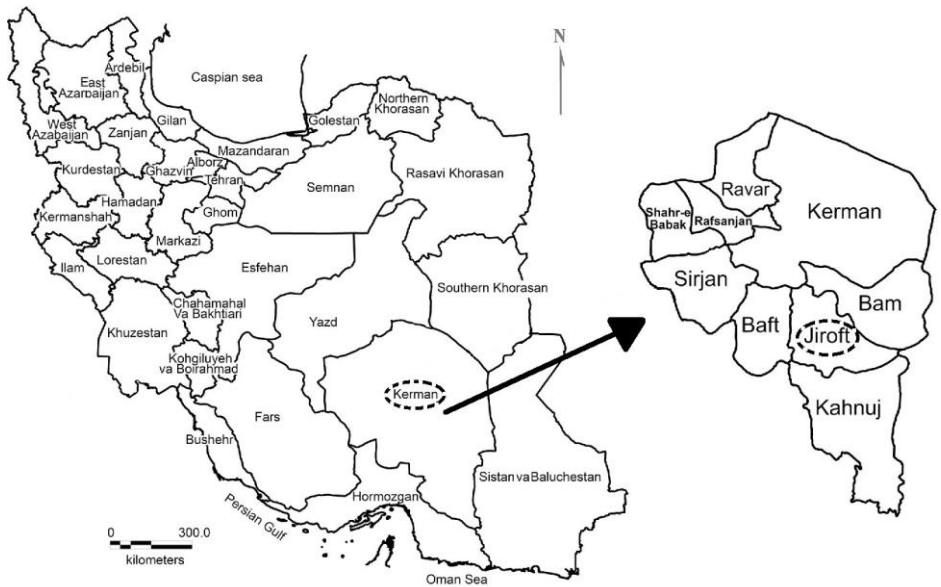


Figure 1. Map of Iran (left), specifying Kerman Province (left and right) and Jiroft County (right).