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Article

A catalog of heterostigmatic mites (Acari: Trombidiformes) of Iran

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ABSTRACT

In this study, we conducted a comprehensive review of all heterostigmatic mites that have previously been recorded from Iran. Thus far, 319 species, 70 genera, 12 families and 6 superfamilies of Heterostigmata (Acari: Prostigmata) (of 2265 known world species, 232 genera, 18 families and 8 superfamilies) have been recorded from different regions of Iran. Our study reveals a substantially immense diversity of Iranian heterostigmatic mite fauna, representing 15% and 4% of all heterostigmatic mites recorded and described from Iran, respectively by reviewing research of many scientists during more than 50 years. In addition to Iranian heterostigmatic mite taxa, all genera, families and superfamilies of world's Heterostigmata have been mentioned.

KEYWORDS: Biodiversity, fauna, geographical distribution, phoresy, soil invertebrates.

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INTRODUCTION

Heterostigmata, is a cohort of mite within supercohort Eleutherengonides and suborder Prostigmata of Acari which includes about 2257 extant and eight extinct species, categorized in 229 (+ 3†) genera, 17 (+ 1†) families and seven (+ 1†) superfamilies (Table 1) (Zhang *et al.* 2011; Sidorchuk *et al.* 2016; Gheblealivand *et al.* 2016c, 2018; Katlav *et al.* 2015c, 2020, 2021; Khaustov and Minor 2018; Seyedein *et al.* 2020, 2021; Khaustov and Abramov 2021; Khaustov *et al.* 2021a, b; Barbosa *et al.* 2021; Khaustov and Frolov 2022; Rahiminejad *et al.* 2022a, etc.). These mites are highly diverse and represent a great variety of lifestyles as well as a diverse range of associations with habitats and hosts, comprising a distinct evolutionarily derived cohort among Actinotrichida (Lindquist 1986; Kaliszewski *et al.* 1995; Walter *et al.* 2009; Zhang *et al.* 2011; Sidorchuk *et al.* 2016; Katlav *et al.* 2020; Khaustov *et al.* 2021). The mites are extremely diverse in their biological and ecological diversification with many species showing fungivory, algivory, phytophagy and predatory (Kaliszewski *et al.* 1995; Lin and Zhang 2002; Khaustov 2008; Walter *et al.* 2009) and many others exhibiting various symbiotic associations (such as kleptoparasitism, parasitism, parasitoidism) with other animals (especially insects) (Krantz and Walter 2009). Moreover, heterostigmatic mites represent a dynamic hereafter phoretic relationship with other animals (mainly insects) that allows them to attach to their hosts' bodies and be transferred from one habitat to another (Kaliszewski *et al.* 1995; Camerik 2010; Walter *et al.* 2009). This adaptive strategy enables mites to spread spatially and access new food resources, escape from antagonistic agents (predators and parasites), decrease the

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pressures of inter/intraspecies competition and also play an important role in dispersal of microorganisms (fungi, nematodes, protozoan and bacteria) (Hofstetter and Moser 2014; Baumann 2018; Pepato *et al.* 2022; Seeman and Walter 2023).

Table 1. The number of Iranian and world known heterostigmatic taxa.

Cohort Heterostigmata	Iranian records/Category/(extant + fossil world record)
Superfamily Tarsocheyleoidea	1 Family (1); 1 Genus (2); 3 species (16 + 1†)
Superfamily Heterocheyleoidea	0 Family (1); 0 Genera (1); 0 Species (26)
Superfamily Dolichocyboidea	1 Family (2); 5 Genera (8); 21 Species (61 + 1†)
Superfamily Trochometridioidea	2 Family (3); 5 Genera (8); 11 species (36)
Superfamily Pygmephoroidae	4 Families (4); 36 Genera (117); 178 Species + 28 (~1200)
Superfamily Pyemotoidea	2 Families (3); 4 Genera (9 + 2†); 12 Species (73 + 5†)
Superfamily Tarsonemoidea	2 Families (2); 19 Genera (84); 94 Species (~845)
Superfamily Nasutiacaroidae †	0 Family (1†); 0 Genera (1†); 0 Species (1†)
Total	6 + 0† Superfamilies (7 + 1†); 12 Families (17 + 1†); 70 Genera (229 + 3†); 319 Species (~2257 + 8†)

Although Heterostigmata is currently recognized as a specious cohort (Katlav *et al.* 2020), there was not much knowledge about them until 19th century, when there was only one family, Tarsonemidae comprising of four genera, *Tarsonemus* Canestrini and Fanzago, 1877, *Pediculoides* Targioni-Tozzetti, 1875, *Pygmephorus* Kramer, 1877 and *Disparipes* Michael, 1884. These mites were classified in four separated families, Tarsonemidae, Pyemotidae, Pygmephoridae and Scutacaridae, during 20th century (Lindquist 1986). Cross (1965) divided superfamily Tarsonemoidea into four families, Tarsonemidae, Podapolipidae, Scutacaridae and Pyemotidae. He considered three subfamilies, the Pyemotinae, Acarophenacinae and Pygmephorinae for Pyemotidae and included *Resinacarus*, *Pyemotes*, *Trochometridium*, *Dolichocybe*, *Pavania*, *Siteroptes* into Pyemotinae, *Acarophenax*, *Paracarophenax*, *Adactylidium* and *Caraboacarus* into Acarophenacinae. Moreover, Pygmephorinae has been categorized within three tribes, Pygmephorini with *Pediculaster*, *Pygmephorus* and *Microdispodides*, Microdispini with *Glyphidomastax*, *Perperipes*, *Peponocara*, *Myrmecodispus* and *Microdispus* and eventually, Neopygmephorini with *Acinogaster*, *Neopygmephorus*, *Pseudopygmephorus* and *Parapygmephorus*. He regarded *Acarothorectes* and *Premicrodispus* as subgenera of *Pediculaster* and *Microdispus* genera, respectively. Heterostigmata was retained in Prostigmata and was lowered in hierarchic rank, as a part of Eleutherengonides by Lindquist (1976, 1986). He regarded seven superfamilies within Heterostigmata and included Scutacaridae in the Pygmephoroidae and Microdispinae as a separate subfamily in Pygmephoridae. Then Kaliszewski *et al.* (1995) considered 8 superfamilies; raised Microdipidae to the family level and also separated Scutacaridae from Pygmephoroidae and placed both of them in the Scutacaroidae. In recent years, the classification of the higher taxa has undergone numerous changes. Walter *et al.* (2009) recognized 8 superfamilies and 16 families. They recognized Siteroptidae in the Pygmephoroidae while Zhang *et al.* (2011) included Siteroptidae as a subfamily in the Microdispidae. Bemdidiacaridae was also placed in the Trochometridiidae by Walter *et al.* (2009) and Zhang *et al.* (2011). Although Neopygmephoridae has been promoted to family-level by Khaustov (2004) but Walter *et al.* (2009) did not recognize Neopygmephoridae; however, Zhang *et al.* (2011) brought this family in the checklist of world heterostigmatic mites. Recently, Sidorchuk *et al.* (2016) also added a fossil superfamily, Nasutiacaroidae, to Heterostigmatina recovered from Cretaceous amber.

In Iran, the first report of heterostigmatic mites was *Pyemotes ventricosus* (Newport, 1850) which was recorded parasitic on xylophagous beetles by Radjabi (1969). Later on, many scattered records of Iranian heterostigmatic mites have been documented in several studies which almost all of them were led by Kamali *et al.* (2001). More specialized studies commenced by Hajiqanbar and his team

(Hajiqanbar 2002) which led to more than 74 new species and six new genera (of 83 and six new species and genera described from Iran) (Table 2). Unfortunately, he sadly passed away on 14 October 2021; yet, his inspirational research impact on study of these mites has never allowed such studies to be discontinued and thus followed by his students and colleagues (Rahiminejad *et al.* 2022).

Currently, no study has collated and cataloged the number of heterostigmatic mite species and the regions of their records in Iran. Therefore, this requirement prompted the current study to prepare, document and gather all the records of Iranian heterostigmatic mites. With regards to many new mite taxa which were described and recorded from Iran during the last two decades after Kamali *et al.* (2001), this paper can be used as a reference for future research and be the first step to prepare the catalog of Iranian Acari.

MATERIALS AND METHODS

About 250 journal and congress articles along with M. Sc. and Ph. D. theses have been reviewed and their information collated for preparing Iranian heterostigmatic mite catalog. For some references there was not any online format and the hard-copy versions was hardly attainable; thus, data and original documents were hard to access and it took a lot of time to find and examine them.

In this paper, according to information presented in recently published papers, we consider the superfamily Scutacaroidae as the family Scutacaridae Oudemans, 1916 and subfamily Neopygmephorinae as a family (Neopygmephoridae Cross, 1965) in superfamily Pygmephoroidae (Khaustov 2004, 2008); Siteroptidae as a genus (*Siteroptes* Amerling, 1861) within family Pygmephoridae Cross, 1965 (Khaustov 2015); Bembidiacaridae as a genus (*Bembidiacarus* Khaustov, 2000) in the family Athyreacaridae Lindquist, Kaliszewski & Rack, 1990 (Khaustov and Frolov 2020) and Carabacaridae Mahunka, 1970 as a family in superfamily Trochometridioidea (Klimov *et al.* 2017) (see Table 2).

RESULTS

This study provided information about to all heterostigmatic mites reported from Iran and their host associations (insects or other animals) and/or habitats (soil, litter, stored product, manure pile, etc.) as well their distribution across Iranian provinces. All known families are represented in phylogenetical order as in Kaliszewski *et al.* (1995) and Walter *et al.* (2009). Overall 319 species, 70 genera, 12 families belonging to 6 superfamilies have been recorded (Table 2).

Table 2. All heterostigmatic mites recorded from Iran along with their host and reported region. The number of taxa (Iranian and world species) have been added to the genera/families and superfamilies rows.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
Cohort Heterostigmata Berlese, 1897			6 + 0 † superfamilies (7 + 1 †); 12 families (17 + 1 †); 70 genera (229 + 3 †); 319 species (~2257 + 8 †)
Superfamily Tarsocheyloidea			1 family (1); 1 genus (2); 3 species (16 + 1 †)
Family Tarsocheylidae Atyeo & Baker, 1964			1 genus (2); 3 species (15 + 1 †)
<i>Hoplocheylus</i> Atyeo & Baker, 1964			3 species (14 + 1 †)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>H. evansi</i> Arjomandi & Hajiqaanbar, 2017	from nest of <i>Messor denticulatus</i> Santschi (Hym.: Formicidae)	Mazandaran province (Miankaleh peninsula)	Arjomandi <i>et al.</i> (2017b)
<i>H. fereshtae</i> Amin, Khanjani & Ueckermann, 2014	from soil under <i>Phragmites australis</i> (Cav.) (Poaceae)	Markazi province (Mahalat)	Amin <i>et al.</i> (2014b)
<i>H. logispinus</i> (Atyeo & Baker, 1964)	from litter under <i>Phragmites australis</i> (Poaceae)	Markazi province (Mahalat)	Amin <i>et al.</i> (2014b)
<i>Tarsocheylus</i> Berlese, 1904	-	-	0 species (1)
Superfamily Heterocheyleoidea			0 family (1); 0 genus (1); 0 species (26)
Family Heterocheylidae			
Tragardh, 1950			
Heterocheylidae Trägårdh, 1950			0 genus (1)
<i>Heterocheylus</i> Lombardini, 1926			0 species (26)
Subsection Tarsonemina			
Canestrini & Fanzago, 1877			
Superfamily Dolichocyboidea			1 family (2); 5 genera (7); 21 species (61 + 1†)
Family Dolichocybidae			5 genera (6); 21 species (60 + 1†)
Mahunka, 1970			17 species (48 + 1†)
Subfamily Dolichocybinae			
Mahunka, 1970			
<i>Dolichocybe</i> Krantz, 1957			3 species (12 + 1†)
<i>D. orzueeyehiensis</i> Hajiqaanbar, Khaustov & Mortazavi, 2019			Hajiqaanbar <i>et al.</i> (2019a)
<i>D. silvani</i> Rahiminejad & Hajiqaanbar, 2011			Rahiminejad <i>et al.</i> (2011a, 2012); Katlav <i>et al.</i> (2015d)
	<i>Adoretus</i> sp. (Col.: Scarabaeidae)	Kerman Province (Orzueeyeh)	
	<i>Silvanus</i> sp. (Col.: Silvanidae); <i>Bitoma crenata</i> Fabricius (Col.: Zopheridae) & <i>Uleiota planata</i> (L.) (Col.: Silvanidae)	Golestan province (Gorgan); Mazandaran province (Abas Abad)	
<i>D. varkana</i> Rahiminejad & Hajiqaanbar, 2011			Rahiminejad <i>et al.</i> (2011a, 2012)
	<i>Corticeus unicolor</i> (Piller & Mitterpacher) (Col.: Tenebrionidae)	Golestan province (Gorgan)	
<i>Pavania</i> Lombardini, 1949			14 species (36)
<i>Pavania gymnopleuri</i> species group			3 species (8)
<i>P. gymnopleuri</i> Hajiqaanbar & Khaustov, 2010			Hajiqaanbar & Khaustov (2010); Badoodam (2014); Sobhi <i>et al.</i> (2017b)
	<i>Gymnopleurus mopsus persianus</i> Reitter, <i>Onthophagus</i> sp., <i>Gymnopleurus mopsus</i> Pallas & <i>Gymnopleurus flagellates</i> (Fabricius) (Col.: Scarabaeidae)	Razavi Khorasan province (Sabzevar); Golestane province (Kalaleh); Ardabil province (Meshguin-shahr)	
<i>P. onthophagi</i> Hajiqaanbar & Khaustov, 2010			Hajiqaanbar & Khaustov (2010); Loghmani <i>et al.</i> (2013)
	<i>Onthophagus (Euonthophagus) gibbosus gibbosus</i> (Scriba, 1970) and <i>Onthophagus (Euonthophagus) amyntasalces</i> (Fabricius) (Col.: Scarabaeidae) in horse-dung at an equitation club	North Khorasan province (Bojnord and Esfarayen) and Razavi Khorasan province (Shandiz)	

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. sabzevarensis</i> Hajiqanbar & Khaustov, 2010	<i>Gymnopleurus mopsus persianus</i> Reitter, <i>Gymnopleurus mopsus</i> (Pallas) and <i>Onthophagus</i> (s. str.) <i>taurus</i> (Schreber) (Col.: Scarabaeidae)	Razavi Khorasan province (Sabzevar and Bajestan)	Hajiqanbar & Khaustov (2010); Loghmani <i>et al.</i> (2013)
<i>P. carabidophila</i> Khaustov, 2005	<i>Rhyssmodes orientalis</i> Mulsant & Godart (Col.: Scarabaeidae)	Sistan and Baluchestan province	10 species (27) Tashakor <i>et al.</i> (2013)
<i>P. elongata</i> Hajiqanbar & Khaustov, 2010	An unidentified carabid beetle (Col.: Carabidae)	North Khorasan province (Elevations of Maneh and Samalghan)	Hajiqanbar & Khaustov (2010)
<i>P. khiavensis</i> Sobhi & Hajiqanbar, 2017	Under the metanotum of <i>Euoniticellus fulvus</i> (Goeze) (Coleoptera: Scarabaeidae)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017b)
<i>P. kamalii</i> Hajiqanbar & Khaustov, 2010	<i>Scarabaeus</i> spp. (Col.: Scarabaeidae)	North Khorasan province (Esfarayen); Mazandaran province (Noor)	Hajiqanbar & Khaustov (2010); Hajiqanbar & Arjomandi (2019a)
<i>P. kermaniensis</i> Hajiqanbar, Khaustov & Mortazavi, 2019	<i>Aphodius cf. lividus</i> (Olivier) (Col.: Scarabaeidae)	Kerman Province (Anbarabad)	Hajiqanbar <i>et al.</i> (2019a)
<i>P. lanceolata</i> Bahramian & Hajiqanbar, 2013	<i>Scarabaeus</i> (<i>Scarabaeus</i>) <i>pius</i> (Illiger) (Col.: Scarabaeidae)	Isfahan province (Semirrom)	Bahramian <i>et al.</i> (2015)
<i>P. magowskii</i> Hajiqanbar, Khaustov & Mortazavi, 2019	<i>Trox</i> sp. (Col.: Trogidae)	Kerman Province (Sarcheshmeh)	Hajiqanbar <i>et al.</i> (2019a)
<i>P. megasolenidia</i> Hajiqanbar, Khaustov & Mortazavi, 2019	<i>Aphodius</i> sp. (Col.: Scarabaeidae)	Kerman Province (Anbarabad)	Hajiqanbar <i>et al.</i> (2019a)
<i>P. scarabaeophilus</i> Hajiqanbar, Khaustov & Mortazavi, 2019	<i>Scarabaeus</i> sp. (Col.: Scarabaeidae).	Kerman Province (Rafsanjan and Anbarabad)	Hajiqanbar <i>et al.</i> (2019a)
<i>P. tadjikistanica</i> Sevastianov, 1980	<i>Onthophagus</i> sp.; <i>Onthophagus taurus</i> (Schreber) & <i>Euoniticellus fulvus</i> (Goeze) (Col.: Scarabaeidae)	Isfahan province; Mazandaran province (Abas Abad, Ramsar & Noor)	Tajodin (2013); Katlav <i>et al.</i> (2015d)
<i>P. setiformis</i> species group			1 species (1)
<i>P. setiformis</i> Loghmani & Hajiqanbar, 2013	phoretic on <i>Onthophagus</i> (<i>Palaeonthophagus</i>) <i>vitulus</i> F. (Col.: Scarabaeidae)	Razavi Khorasan province (Quchan)	Loghmani <i>et al.</i> (2013)
Subfamily Formicomotinae			4 species (12)
Sevastianov, 1980			
<i>Acanthomastix</i> Mahunka, 1972			1 species (5)
<i>A. derivatus</i> Katlav & Hajiqanbar, 2014	<i>Uloma culinaris</i> (L.) (Col.: Tenebrionidae) and <i>Prostomis</i> sp. (Col.: Prostomidae)	Mazandaran Province (Kelardasht (Abbas-Abad forest) and Noor)	Katlav <i>et al.</i> (2014a)
<i>Dolichomotes</i> Smiley, 1967			2 species (3)
<i>D. crossi</i> Rack, 1973	from soil and litter	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2022b)
<i>D. sinuspersicus</i> Mortazavi & Hajiqanbar, 2015	<i>Sinoxylon pugnax</i> Lesne (Col.: Bostrichidae)	Hormozgan province (Minab)	Mortazavi <i>et al.</i> (2015)
<i>Formicomotes</i> Sevastianov, 1980			1 species (3)
<i>F. octipes</i> Sevastianov, 1980	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Golestan province (Bandar-E-Turkmen and Gorgan)	Rahiminejad & Hajiqanbar (2020)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Rafamastix</i> Magowski, 1997	-	-	0 species (1)
Family Crotalomorphidae			0 genus (1); 0 species (1)
Lindquist & Krantz, 2002			-
<i>Crotalomorpha</i> Lindquist & Krantz, 2002	-	-	-
Superfamily Trochometridioidea			2 family (3); 5 genus (8); 11 species (36)
Family Athyreacaridae	-	-	0 genus (3); 0 species (21)
Lindquist, Kaliszewski & Rack, 1990			
<i>Athyreacarus</i> Lindquist, Kaliszewski & Rack, 1990	-	-	0 species (19)
<i>Bembidiacarus</i> Khaustov, 2000	-	-	0 species (1)
<i>Neoathyreacarus</i> Khaustov & Frolov, 2022	-	-	0 species (1)
Family Caraboacaridae			3 genera (3); 5 species (8)
Mahunka, 1970			3 species (6)
<i>Caraboacarus</i> Krczal, 1959			Rahiminejad <i>et al.</i> (2010a)
<i>C. karenae</i> Nickel & Elzinga, 1969	Carabid beetle	Golestan province (Gorgan)	
<i>C. kraczali</i> Eidelberg, 1994	<i>Calosoma</i> sp. (Col.: Carabidae); <i>Calosoma auropunctatum dsungaricum</i> Gebler (Col.: Carabidae)	Kerman province	Mortazavi <i>et al.</i> (2010b); Mortazavi & Hajiqaanbar (2012b)
<i>C. stammeri</i> Krczal, 1959	An Unidentified carabid beetle; <i>Amara</i> sp., <i>Harpalus</i> sp., <i>Anisodactylus signatus</i> (Panzer), <i>Diachromus germanus</i> (L.) (Col.: Carabidae) & <i>Cicindela (Cylindera) germanica</i> (L.) (Col.: Carabidae: Cicindelinae); <i>Calosoma</i> Weber & <i>Harpalus</i> Latreille, (Col.: Carabidae)	Alborz province (Malard); Mazandaran province (Tonekabon); Ardabil province (Meshguin-shahr); Golestan province (Gorgan)	Mirjamali <i>et al.</i> (2008a); Katlav <i>et al.</i> (2015d); Sobhi <i>et al.</i> (2017e); Rahiminejad & Hajiqaanbar (2020)
<i>Intercaraboacarus</i> Katlav & Hajiqaanbar, 2015			1 species (1)
<i>I. clivinus</i> Katlav & Hajiqaanbar, 2015	<i>Clivina ypsilon</i> Dejean (Col.: Carabidae)	Mazandaran province (Noor forest)	Katlav <i>et al.</i> (2015c)
<i>Minicaraboacarus</i> Hajiqaanbar & Khaustov, 2008			1 species (1)
<i>M. quadridiscalis</i> Hajiqaanbar & Khaustov, 2008	<i>Cymbionotum semeleleri</i> (Chaudoir) (Col.: Carabidae); <i>Scarites (Scarites) procerus eurytus</i> Fischer von Waldheim (Col.: Carabidae)	Razavi Khorassan province (Feizabad of Torbat Heidariyeh); Kerman province (Rafsanjan)	Hajiqaanbar <i>et al.</i> (2008c); Mortazavi & Hajiqaanbar (2012b)
Family Trochometridiidae			2 genera (2); 6 species (7)
Mahunka, 1970			1 species (1)
<i>Neotrochometridium</i> Hajiqaanbar & Khaustov, 2009			

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>N. sensillum</i> Hajiqaanbar & Khaustov, 2009	<i>Cymbionotum semelederi</i> (Chaudoir) and <i>Siagona europaea</i> Dejean (Col.: Carabidae)	Razavi Khorasan Province (Torbat Heidariyeh)	Hajiqaanbar <i>et al.</i> (2009)
<i>Trochometruidium</i> Cross, 1965			5 species (6)
<i>T. chinensis</i> (Mahunka, 1966)	An undetermined earwig (Derm.: Labiduridae)	North Khorasan province (Maneh and Samalghan)	Hajiqaanbar <i>et al.</i> (2009)
<i>T. iranikum</i> Hajiqaanbar & Khaustov, 2009	<i>Pseudapis nilotica</i> (Smith) (Hym.: Halictidae); <i>Komarowia tartara</i> (Saussure) (Hym.: Tiphiidae); an undetermined fly (Dip.: Calliphoridae) and <i>Philanthus triangulum</i> (Fabricius) (Hym.: Crabronidae)	Razavi Khorasan province (Sabzevar, Bajestan & Shandiz) and Isfahan province	Hajiqaanbar <i>et al.</i> (2009); Loghmani <i>et al.</i> (2014b); Tajodin <i>et al.</i> (2012)
<i>T. kazakhstanikum</i> Khaustov & Eidelberg, 2002	<i>Gymnopleurus</i> (s. str.) <i>mopsus persianus</i> Reitter (Col.: Scarabaeidae); <i>Copris lunaris</i> (L.) (Col.: Scarabaeidae)	Razavi Khorasan province (Sabzevar); Mazandaran province (Miankaleh peninsula)	Hajiqaanbar <i>et al.</i> (2009); Hajiqaanbar & Arjomandi (2019a)
<i>T. kermanikum</i> Mortazavi & Hajiqaanbar, 2011	<i>Paulusiella</i> sp. (Col.: Elateridae); <i>Komarowia tartara</i> (Saussure) (Hym.: Tiphiidae); <i>Coccobius schreberi</i> (L.) (Col.: Scarabaeidae); <i>Labidura riparia</i> (Pallas) (Derm.: Labiduridae); <i>Gryllus desertus</i> Pallas (Orthoptera: Gryllidae)	Kerman Province (Orzueeyeh & Rafsanjan); Razavi Khorasan province (Bajestan); Mazandaran province (Miankaleh peninsula); Golestan province (Bandar-e-Turkmen)	Mortazavi <i>et al.</i> (2011); Mortazavi & Hajiqaanbar (2012b); Rahiminejad <i>et al.</i> (2014a); Loghmani <i>et al.</i> (2014b); Hajiqaanbar & Arjomandi (2019a); Rahiminejad & Hajiqaanbar (2020)
<i>T. mutilliphillum</i> Loghmani & Hajiqaanbar, 2014	<i>Tricholabiodes</i> spp. & <i>Dentilla</i> spp. (Hym. Mutillidae)	Razavi Khorasan province (Bajestan)	Loghmani <i>et al.</i> (2014b)
Superfamily Pygmephoroidae			4 families (4); 36 genera (117); 178 species + 28 (~1200)
Family Pygmephoridae Cross, 1965			13 genera (34); 40 species + 11 (~330)
<i>Acarothorectes</i> Cross, 1965			1 species (1)
<i>Acarothorectes</i> sp.	Potato's fields	Some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Jiroft)	Baradaran <i>et al.</i> (2010)
<i>Apediculaster</i> Rahiminejad & Hajiqaanbar, 2016			1 species (1)
<i>A. carpelimus</i> Rahiminejad & Hajiqaanbar, 2016	<i>Carpelimus rivularis</i> (Motschulsky) (Col.: Staphylinidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2016)
<i>Elattoma</i> Mahunka, 1969			3 species (10 + 2)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Elattoma</i> Mahunka, 1969			3 species (10 + 2)
<i>E. abeskoun</i> Rahiminejad & Hajiqaanbar, 2011	<i>Morimus verecundus</i> (Faldermann) (Col.: Cerambycidae); an undetermined bostrichid beetle (Col.: Bostrichidae) & <i>Xyleborus monographus</i> (Fabricius) (Col.: Curculionidae: Scolytinae)	Golestan province (Gorgan); Mazandaran province (Tonekabon)	Rahiminejad <i>et al.</i> (2011b, 2012); Katlav <i>et al.</i> (2015d)
<i>E. cerambycidum</i> Rahiminejad & Hajiqaanbar, 2011	<i>Morimus verecundus</i> (Faldermann) (Col.: Cerambycidae)	Golestan province (Gorgan); Mazandaran province (Neka)	Rahiminejad <i>et al.</i> (2011b, 2012); Hajiqaanbar & Arjomandi (2019a)
<i>E. kornilovi</i> Khaustov, 2000	<i>Morimus verecundus</i> (Faldermann) (Col.: Cerambycidae)	Golestan province (Gorgan, Bandar-e-Gaz, Kordkoy & Nokandeh)	Rahiminejad <i>et al.</i> (2014b); Rahiminejad & Hajiqaanbar (2020)
<i>Krczaldania</i> Sasa, 1961			1 species (2)
<i>K. primitiva</i> (Krczal, 1959)	Associated with <i>Psathyrella</i> sp. (Fungi: Agaricales)	Golestan province (Gorgan)	Majidi <i>et al.</i> (2022b)
<i>Metapygmephorellus</i> Rahiminejad, Hajiqaanbar & Khaustov, 2015			1 species (2)
<i>M. colydius</i> Rahiminejad & Hajiqaanbar, 2015	<i>Colydium elongatum</i> (F.) (Col.: Zopheridae) & <i>Dorcus parallelipipedus</i> (L.) (Col.: Lucanidae); <i>Parandra caspia</i> Ménétriès (Col.: Cerambycidae)	Golestan province (Gorgan); Mazandaran province (Kelardasht, Abbas-Abad forest; Noor)	Rahiminejad <i>et al.</i> (2015c); Hajiqaanbar & Arjomandi (2019a)
<i>Neositeroptes</i> Livshits, Mitrofanov & Sharonov, 1986			2 species (32)
<i>N. opacus</i> Livshits, Mitrovanov & Sharonov, 1986	soil samples from pomegranate orchards	Khorasan Razavi province (Mahvelat region)	Filekesh <i>et al.</i> (2014)
<i>N. crossi</i> (Mahunka, 1969) (Syn.: <i>Siteroptes crossi</i> Mahunka, 1969)	soil sample	Tehran province (Malard); Khorasan Razavi province (Mahvelat region)	Mirjamali <i>et al.</i> (2008b); Filekesh <i>et al.</i> (2014)
<i>Propygmephorus</i> Cross, 1974			1 species (2)
<i>P. crossi</i> Katlav & Hajiqaanbar, 2016	<i>Pseudoophonus rufipes</i> (De Geer) & <i>Pterostichus caspius</i> (Menetries) (Col.: Carabidae); <i>Dorcus parallelipipedus</i> (L.) & <i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Mazandaran province (Kelardasht, Abbas-Abad forest; Sisangan forest); Northern forests of Iran	Katlav <i>et al.</i> (2016); Arjomandi <i>et al.</i> (2017c); Hajiqaanbar & Arjomandi (2019a)
<i>Pediculaster</i> Vitzthum, 1931			15 species + 4 (~100)
<i>P. absentia</i> Rahiminejad & Seyedein, 2021	<i>Helina</i> sp. (Dip.: Muscidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2021)
<i>P. camerikae</i> Khaustov, 2008	<i>Helina</i> sp. (Dip.: Muscidae)	Golestan province (Bandar-e-Turkmen)	Rahiminejad & Hajiqaanbar (2020)
<i>P. dudichi</i> Mahunka, 1970	From soil sample	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2022b)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. flechtmanni</i> (Wicht, 1970)	on button mushroom (<i>Agaricus bisporus</i> (Lange))	Alborz province (Karaj)	Kheradmand <i>et al.</i> (2007)
<i>P. kneeboni</i> (Wicht, 1970)	on button mushroom (<i>Agaricus bisporus</i> (Lange, 1926))	Alborz province (Karaj)	Kheradmand <i>et al.</i> (2007)
<i>P. manicatus</i> (Berlese, 1904)	<i>Alhagi</i> sp. (Fabaceae); from soil sample (pomegranate orchards)	Hamedan and Ardabil provinces; Tehran province (Varamin); Razavi Khorasan province (Mahvelat region)	Khanjani (1996); Kheradpir & Pakyari (2011); Filekesh <i>et al.</i> (2014)
<i>P. martyani</i> Khaustov, 2008	<i>Helina</i> sp. (Dip.: Muscidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2021)
<i>P. mesembrinae</i> (Canestrini, 1881)	from Manure pile; Soil sample of alfalfa fields; Soil sample of different crop fields from soil sample (pomegranate orchards)	Hormozgan province (Bandar-Abbas); East Azarbaijan (Western & southwest parts); Razavi Khorasan province (Mahvelat region)	Mahunka & Rohde (1970); Lotfollahi <i>et al.</i> (2008a); Hashemi Khabir <i>et al.</i> (2013); Filekesh <i>et al.</i> (2014)
<i>P. montanus</i> Khaustov, 2008	<i>Helina</i> sp. (Dip.: Muscidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2021)
<i>P. muscarius</i> (Martin, 1978)	<i>Helina</i> sp. (Dip.: Muscidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2021)
<i>P. neutarii</i> Khaustov <i>et al.</i> , 2014	soil sample	Razavi Khorasan province (Jovein city)	Fatehinia <i>et al.</i> (2022)
<i>P. pseudomanicatus</i> Camerik, 2001	from soil sample (pomegranate orchards); <i>Helina</i> sp. (Dip.: Muscidae)	Razavi Khorasan province (Mahvelat region); Golestan province (Bandar-e-Turkmen)	Hajiqanbar (2002); Haddad Irani-Nejad <i>et al.</i> (2005); Filekesh <i>et al.</i> (2014); Rahiminejad & Hajiqanbar (2020)
<i>P. rysanovy</i> Samsinak, 1989	on the body of the host fly (Diptera: Heleomyzidae)	Fars province (Eghlid)	Majidi <i>et al.</i> (2018a)
<i>P. sp. nr. gautengensis</i> Camerik, 1996	cotton	Ardabil province	Haddad Irani-Nejad (1998)
<i>P. sp. nr. manicatus</i> (Berlese, 1904)	cotton	Ardabil province	Haddad Irani-Nejad (1998)
<i>Pediculaster</i> sp.	soil	Tehran province (Malard)	Mirjamali <i>et al.</i> (2008b)
<i>Pediculaster</i> sp.	soil sample of alfalfa fields	East Azarbaijan (Western parts)	Lotfollahi <i>et al.</i> (2008a)
<i>Pediculaster</i> sp.	soil	Sistan & Baluchestan province (Sistan region)	Arjmandinejad <i>et al.</i> (2008)
<i>Pediculaster</i> sp.	soil, plant litters, plant leaves and twigs of ornamental plants	Tehran province (some regions of Tehran)	Hamidi <i>et al.</i> (2013)
<i>Pseudopygmephorellus</i> Khaustov, 2008			2 species (8)
<i>P. mazandaranicus</i> Katlav & Hajiqanbar, 2015	<i>Onthophagus</i> sp., <i>Aphodius depressus</i> (Kugelann) & <i>A. varians</i> Dufschmid (Col.: Scarabaeidae)	Mazandaran province (Kelardasht, Abbas-Abad forest; Mazichal elevations)	Katlav <i>et al.</i> (2015a); Hajiqanbar & Arjomandi (2019a)
<i>P. szekessyi</i> (Mahunka, 1970)	phoretic on <i>Aphodius vittatus</i> Say (Col.: Scarabaeidae)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017b)
<i>Pygmephorus</i> Kramer, 1877			2 species (~150)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Pygmephorus</i> sp.	grape	Khuzestan province	Darvishzadeh (1997)
<i>Pygmephorus</i> sp.	stored wheat	Golestan province (Gorgan)	Ardeshtir & Khormali (2008)
<i>Sevastianovella</i> Livshits, Mitrofanov & Sharonov 1986	-	-	1 species (8)
<i>S. bohemicus</i> Mahunka, 1963 (Syn.: <i>Siteroptes bohemicus</i> Mahunka, 1963)	soil	Alborz province (Malard)	Mirjamali <i>et al.</i> (2008b)
<i>Siteroptes</i> Amerling, 1861			1 species + 5 (14)
<i>S. cerealium</i> (Kirchner, 1864) (Syn.: <i>S. graminum</i> (Reuter))	soil sample	East Azerbaijan province; Khuzestan province (Ahvaz)	Fathipour (1994); Baharloo <i>et al.</i> (2006)
<i>Siteroptes</i> sp.	cotton, pagoda tree (<i>Sophora alopecuroides</i> L.)	Ardabil & Hamedan provinces	Khanjani (1996); Haddad-Iraninejad (1998)
<i>Siteroptes</i> sp.	soil samples	Tehran province (Varamin)	Kheradpir & Pakyari (2011)
<i>Siteroptes</i> sp.	samples from Strawberry fields	Kurdistan province	Mansour ghazi <i>et al.</i> (2006)
<i>Siteroptes</i> sp.	in media cultures of fungus, <i>Nigrospora oryzae</i> (Fungi: Ascomycota)	Khorasan province	Mirzaee <i>et al.</i> (2013)
<i>Siteroptes</i> sp.	potato's fields	some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Kerman provinces)	Baradaran <i>et al.</i> (2010)
<i>Spatulaphorus</i> Rack, 1993			5 species (16)
<i>S. copridis</i> Khaustov, 2007	<i>Geotrupes</i> spp. (Col.: Geotrupidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2011d, 2013)
<i>S. geotruporum</i> Khaustov, 2005	<i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2019b)
<i>S. gorganica</i> Rahiminejad & Hajiqanbar, 2011	<i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Golestan province (Gorgan); Mazandaran province (Kelardasht, Abbas Abad)	Rahiminejad <i>et al.</i> (2011c, d); Katlav <i>et al.</i> (2015d)
<i>S. gymnopleuri</i> Sobhi & Hajiqanbar, 2017	<i>Gymnopleurus flagellatus</i> (Fabricius) (Col.: Scarabaeidae)	Ardabil province (Meshguin shahr)	Sobhi <i>et al.</i> (2017f)
<i>S. vladimiri</i> Khaustov, 2005	<i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Mazandaran province (Tonekabon & Ramsar); Golestan province (Gorgan)	Katlav <i>et al.</i> (2015d); Seyedein <i>et al.</i> (2019a); Rahiminejad <i>et al.</i> (2020b)
<i>Asensilla</i> Rack, 1974	-	-	0 species (1)
<i>Bochkovlaster</i> Khaustov, 2019	-	-	0 species (1)
<i>Brasilopsis</i> Mahunka, 1975	-	-	0 species (3)
<i>Cerattoma</i> Mahunka, 1972	-	-	0 species (2)
<i>Dudichiana</i> Mahunka, 1970	-	-	0 species (1)
<i>Geotrupophorus</i> Mahunka, 1970	-	-	0 species (1)
<i>Luciaphorus</i> Mahunka, 1981	-	-	0 species (3)
<i>Mahunkania</i> Rack, 1972	-	-	0 species (5)
<i>Mesopotamiophorus</i> Sevastianov & Zahida Al Douri, 1991	-	-	0 species (1)
<i>Metasiteroptes</i> Cross, 1965	-	-	0 species (1)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Microdispodides</i> Vitzthum, 1914	-	-	0 species (5)
<i>Micropygmephorus</i> Khaustov, Hugo-Coetzee & Ermilov, 2017	-	-	0 species (2)
<i>Parapediculaster</i> Khaustov, 2015	-	-	0 species (1)
<i>Parasiteroptes</i> Livshits, Mitrofanov & Sharonov, 1986	-	-	0 species (1)
<i>Pediculitopsis</i> Mahunka, 1970	-	-	0 species (1)
<i>Pseudoluciaphorus</i> Khaustov, Hugo-Coetzee & Ermilov, 2017	-	-	0 species (1)
<i>Pygmephorellus</i> Cross & Moser, 1971	-	-	0 species (3)
<i>Pygmephoroides</i> Mahunka & Fain, 1989	-	-	0 species (1)
<i>Sasadania</i> Kurosa, 1989	-	-	0 species (1)
<i>Strephocheir</i> Mahunka, 1983	-	-	0 species (1)
<i>Ultrasiteroptes</i> Livshits, Mitrofanov & Sharonov, 1986	-	-	0 species (3)
Family Neopygmephoridae			9 genera (29); 42 species + 8 (~260)
Cross, 1965			1 species (11)
<i>Acinogaster</i> Cross, 1965			Abbasi-Moqadam <i>et al.</i> (2016); Sobhi <i>et al.</i> (2017e); Seyedein <i>et al.</i> (2022)
<i>A. microchaetosus</i> (Sevastianov, 1967)	<i>Tetramorium</i> sp. & <i>Pheidole</i> sp. (Hym.: Formicidae)	Mazandaran province (Tonekabon, Sehezar forest); Ardabil province (Meshguin-shahr); Golestan province (Gorgan)	
<i>Allopygmephorus</i> Cross, 1965			6 species (12)
<i>A. heterodactylus</i> Mahunka, 1973	associated with <i>Cercyon</i> sp. (Col.: Hydrophilidae)	Golestan province (Gorgan & Ali-Abad Kenaar-Shahr)	Rahiminejad <i>et al.</i> (2022b)
<i>A. matthesi</i> Kraczal, 1959	associated with <i>Xyleborus</i> sp. (Col.: Curculionidae: Scolytinae)	Golestan province (Gorgan & Sorkhan-Kalateh)	Rahiminejad <i>et al.</i> (2022b)
<i>A. orientalis</i> Mahunka & Mahunka, 1988	soil sample in the vicinity of dry rice cultivation	Golestan province (Gorgan & Nodijeh)	Rahiminejad <i>et al.</i> (2022b)
<i>A. persicus</i> Khaustov & Hajiqanbar, 2005	Undetermined hydrophilid beetle (Coleoptera: Hydrophilidae); <i>Cercyon laminatus</i> Sharp, <i>Enochrus bicolor</i> (Fabricius) (Col.: Hydrophilidae) & an unidentified heterocerid beetle (Col.: Heteroceridae); an unidentified hydrophilid beetles (Col.: Hydrophilidae)	Mazandaran province (Galugah, Tonekabon & Noor); Guilan province (Rasht)	Khaustov & Hajiqanbar (2006); Katlav <i>et al.</i> (2015d); Hajizadeh & Hosseini (2022)
<i>A. punctatus</i> Khaustov & Sazhnev, 2016	associated with <i>rasterius bimaculatus</i> and <i>Augyles</i> Col.: Elateridae & Heteroceridae)	Lorestan province (Borujerd)	Navabi <i>et al.</i> (2018b)
<i>A. spinisetus</i> Khaustov & Sazhnev, 2016	associated with <i>rasterius bimaculatus</i> and <i>Augyles</i> Col.: Elateridae & Heteroceridae)	Lorestan province (Borujerd)	Navabi <i>et al.</i> (2018b)
<i>Bakerdania</i> Sasa, 1961			5 species + 3 (~100)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>B. delanyi</i> (Evans, 1952)	soil	West Azarbaijan province (Miandoab plain)	Haddad Irani-Nejad <i>et al.</i> (2005)
<i>B. graciloides</i> Sevastianov, 1974	soil	Tehran province (Parks of Tehran)	Kazemi & Khaustov (2008)
<i>B. uniseta</i> Khaustov & Hajiqaanbar, 2004	<i>Pleurophorus anatolicus</i> Petrovitz (Col.; Scarabaeidae)	West Azarbaijan province (Miandoab plain)	Khaustov & Hajiqaanbar (2004)
<i>B. sp. nr. intermedia</i> Rack, 1974	Alfalfa, pagoda tree (<i>Sophora alopecuroides</i> L.)	Hamedan province	Khanjani (1996)
<i>B. sp. nr. jonesi</i> Mahunka, 1975	houses	West-Azerbaijan province	Mirfakhraei (1994)
<i>Bakerdania</i> sp.	Cotton	Ardabil province	Haddad-Iraninejad (1998)
<i>Bakerdania</i> sp.	soil sample from beach of Karun	Khuzestan province (Ahvaz)	Arab Yabarati (2014)
<i>Bakerdania</i> sp.	arboreal & soil sample of wheat & barley crops	Fars province (Jahrom)	Ebrahimi <i>et al.</i> (2010)
<i>Kerdabania</i> Khaustov, 2009			5 species (13)
<i>K. inconspicuus</i> Berlese, 1904 (Syn.: <i>Bakerdania centriger</i> (Cooremann, 1951); <i>B. sellnicki</i> (Krczal, 1958))	chicken & cow manure; Soil sample	Isfahan province (Isfahan); Tehran province Rey county); Alborz province (Malard)	Mahunka & Rohde (1970); Mirjamali <i>et al.</i> 2008b; Zafari <i>et al.</i> (2017)
<i>K. magnifica</i> Khaustov, 2009	Soil sample	Tehran province (Rey county)	Zafari <i>et al.</i> (2017)
<i>K. minuta</i> Khaustov, 2009	<i>Ophion obscuratus</i> Fabricius (Hym.: Ichneumonidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Razavi Khorasan province (Khalilabad town); Golestan province (Gorgan)	Loghmani <i>et al.</i> (2014); Rahiminejad <i>et al.</i> (2020b); Rahiminejad & Hajiqaanbar (2020)
<i>K. quadrata</i> (Ewing, 1917) (Syn.: <i>Bakerdania quadrata</i> Ewing, 1917)	honey bee hive; <i>Scolytus amygdali</i> Guerin-Meneville; Soil sample	Kordistan province; Alborz province (Karaj); West Azarbaijan province (Miandoab plain)	Mosaddegh, 1997; Ahadiyat <i>et al.</i> (2004); Haddad Irani-Nejad <i>et al.</i> (2005)
<i>K. variabilis</i> Khaustov, 2009	Soil samples from pomegranate orchards	Khorasan Razavi province (Mahvelat region)	Filekesh <i>et al.</i> (2014)
<i>Parapygmephorus</i> Cross, 1965			4 species + 1 (8)
<i>P. crossi</i> Mahunka, 1974	<i>Halictus (Halictus) resurgens</i> Nurse & <i>H. patellatus</i> Morawitz (Hym.: Halictidae)	Kohgiluyeh and Boyer Ahmad Province (Yasouj); Chaharmahal & Bakhtiari province	Azhari <i>et al.</i> (2018b); Nazari <i>et al.</i> (2018)
<i>P. delyorum</i> Mahunka, 1980	On the body hairs of an unidentified halictid bee; <i>H. (H.) resurgens</i> Nurse (Hym.: Halictidae)	Isfahan province; Chaharmahal & Bakhtiari province	Hajiqaanbar & Rakhshani (2011); Nazari <i>et al.</i> (2018)
<i>P. khorasanicus</i> Hajiqaanbar & Khaustov, 2011	In ventral surfaces of mesosoma & metasoma of <i>H. quadricinctus</i> (Hym.: Halictidae); <i>H. (H.) resurgens</i> Nurse & <i>H. patellatus</i> Morawitz (Hym.: Halictidae)	Razavi Khorasan province (Mashhad); Chaharmahal & Bakhtiari province	Hajiqaanbar <i>et al.</i> (2011d); Nazari <i>et al.</i> (2018)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. magnisetosus</i> Khaustov & Zaliznaya, 2011	<i>Amigella</i> sp. (Hym.: Apidae); <i>Eucera</i> sp. (Hym.: Apidae), <i>Halictus</i> spp., <i>Lasioglossum</i> sp. (Hym.: Halictidae) and <i>Lithurgus chrysurus</i> Fonscolombe (Hym.: Megachilidae) <i>Halictus resurgens</i> Nurse (Hym.: Halictidae)	Razavi Khorasan province (Kalat Naderi; Daregaz town; Nokhandan town; Jovein town; Shandiz town); North Khorasan province (Shirvan town); South Khorasan province (Qaen town); Fars province; Ardabil province (Meshguin-shahr)	Hajiqanbar <i>et al.</i> (2011a); Loghmani <i>et al.</i> (2014); Kiani Bakiani <i>et al.</i> 2016; Sobhi <i>et al.</i> (2017e);
<i>Parapygmephorus</i> sp.	<i>Halictus resurgens</i> Nurse (Hym.: Halictidae)	Fars province	Kiani Bakiani <i>et al.</i> (2016)
<i>Petalomium</i> Cross, 1965			16 species (50)
<i>P. aleinikovae</i> (Sevastianov, 1967)	<i>Camponotus</i> , <i>Lasius</i> & <i>Messor</i> (Hym.: Formicidae)	Isfahan province	Hajiqanbar & Tajodin (2020)
<i>P. camponoti</i> Hajiqanbar & Khaustov, 2013	<i>Camponotus buddhae</i> Forel (Hym.: Formicidae)	North Khorasan province (Shirvan)	Hajiqanbar & Khaustov (2013)
<i>P. crinitus</i> Khaustov & Trach, 2013	<i>Lasius</i> sp. & <i>Tetramorium</i> sp. (Hym.; Formicidae); <i>Camponotus</i> , <i>Lasius</i> & <i>Messor</i> (Hym.: Formicidae)	Isfahan province; Golestan province (Gorgan)	Tajodin (2013); Rahiminejad & Hajiqanbar (2020); Hajiqanbar & Tajodin (2020)
<i>P. fimbrisetum</i> Ebermann & Rack, 1982	<i>Lasius</i> sp. (Hym.: Formicidae)	Mazandaran province (Western parts; Tonekabon, Sehezar Forest)	Abbasi-Moqadam <i>et al.</i> (2015, 2018)
<i>P. formicarum</i> (Berlese, 1903)	<i>Camponotus</i> , <i>Lasius</i> & <i>Messor</i> (Hym.: Formicidae)	Isfahan province	Hajiqanbar & Tajodin (2020)
<i>P. gottrauxi</i> Mahunka, 1977	<i>Camponotus aethiops</i> (Latreille, 1798) (Hym.: Formicidae); <i>Camponotus</i> sp. (Hym.: Formicidae); <i>Camponotus</i> , <i>Lasius</i> & <i>Messor</i> (Hym.: Formicidae)	North Khorasan province (Shirvan); Ardabil province (Meshguin-shahr); Isfahan province	Hajiqanbar & Khaustov (2013); Sobhi <i>et al.</i> (2017e); Hajiqanbar & Tajodin (2020)
<i>P. heterotrichus</i> Mahunka, 1970	<i>Camponotus</i> sp. (Hym.: Formicidae)	Mazandaran province (Alimalat forest, Noor)	Abbasi-Moqadam <i>et al.</i> (2018)
<i>P. kurosai</i> Khaustov, 2014	<i>Lasius turcicus</i> Santschi (Hym.: Formicidae)	Mazandaran province (Neka)	Hajiqanbar & Arjomandi (2019a)
<i>P. mazandaranicum</i> Abbasi-Moqadam & Hajiqanbar, 2018	<i>Aphaenogaster</i> sp. (Hym.: Formicidae)	Mazandaran province (Tonekabon, Dohezar Forest)	Abbasi-Moqadam <i>et al.</i> (2018)
<i>P. nataliae</i> (Sevastianov, 1967)	<i>Tetramorium</i> sp. (Hym.; Formicidae)	Golestan province (Gorgan & Bandar-e-Gaz)	Rahiminejad & Hajiqanbar (2020)
<i>P. olszanowskii</i> Hajiqanbar & Tajodin, 2020	<i>Camponotus</i> , <i>Lasius</i> & <i>Messor</i> (Hym.: Formicidae)	Isfahan province	Hajiqanbar & Tajodin (2020)
<i>P. pseudomyrmecophilus</i> Mahunka, 1970	<i>Lasius umbratus</i> (Nylander) (Hym.: Formicidae)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017e)
<i>P. rarus</i> (Sevastianov, 1967)	<i>Camponotus</i> sp. (Hym.: Formicidae)	Mazandaran province ((Alimalat forest, Noor)	Abbasi-Moqadam <i>et al.</i> (2018)
<i>P. sawtschuki</i> (Sevastianov, 1967)	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Mazandaran province (Abbas Abad-Kelardasht Road, Darasara Forest)	Abbasi-Moqadam <i>et al.</i> (2018)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. scyphicum</i> (Sevastianov, 1967)	<i>Lasius emarginatus</i> (Olivier) (Hym.: Formicidae)	Mazandaran province (Noor Forest)	Abbasi-Moqadam <i>et al.</i> (2018)
<i>P. tauricum</i> Khaustov, 2005	<i>Lucanus ibericus</i> Motschulsky & <i>Dorcus Parallelipedus</i> (L.) (Col.: Lucanidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2020a, b)
<i>Pseudopygmephorus</i> Cross, 1965			3 Species + 4 (17)
<i>P. agarici</i> Zou, Gao & Ma, 1990	<i>Lucanus ibericus</i> Motschulsky & <i>Dorcus Parallelipedus</i> (L.) (Col.: Lucanidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2020a, b)
<i>P. tarsalis</i> (Hirst, 1921) (Syn.: <i>Bakerdania tarsalis</i> Hirst, 1921)	soil sample	West Azarbaijan province (Miandoab plain); Tehran province (Malard)	Haddad Irani-Nejad <i>et al.</i> (2005); Mirjamali <i>et al.</i> (2008b)
<i>P. silvestris</i> (Jacot, 1936)	soil sample from Sugar beet fields	West Azerbaijan province (Miandoab)	Hajiqanbar & Mahunka (2004)
<i>Pseudopygmephorous</i> sp.	potato's fields	Some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Jiroft)	Baradaran <i>et al.</i> (2010)
<i>Pseudopygmephorous</i> sp.	<i>Scarites (Scarites) procerus eurytus</i> Fischer von Waldheim (Col.: Carabidae)	Kerman province (Rafsanjan)	Mortazavi & Hajiqanbar (2012b)
<i>Pseudopygmephorous</i> sp.	soil sample of different crop fields	East Azarbaijan province (southwest parts)	Hashemi Khabir <i>et al.</i> (2013)
<i>Pseudopygmephorous</i> sp.	soil sample	Tehran province (Rey county)	Zafari <i>et al.</i> (2017)
<i>Scarabadania</i> Khaustov & Frolov, 2018			1 species (1)
<i>S. tenuispina</i> (Sevastianov, 1974) (Syn.: <i>Bakerdania uniseta</i> Khaustov & Hajiqanbar, 2004)	<i>Pleurophorus anatolicu</i> Petrovitz (Col.: Scarabaeidae)	West Azarbaijan province (Miandoab plain)	Khaustov & Hajiqanbar (2004)
<i>Troxodania</i> Khaustov & Trach, 2013			1 species (3)
<i>T. decumanus</i> (Krczal, 1959)	<i>Onthophagus furcatus</i> F. (Col.: Scarabaeidae)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017b)
<i>Aegyptophorus</i> Sevastianov & Abo-Korah, 1984	-	-	0 species (2)
<i>Andrebochkovia</i> Khaustov & Frolov, 2019	-	-	0 species (2)
<i>Coleopygmephorus</i> Khaustov & Mandelshtam, 2017	-	-	0 species (5)
<i>Crossdania</i> Khaustova & Whitaker, 2019	-	-	0 species (1)
<i>Guttacarus</i> Mahunka, 1973	-	-	0 species (1)
<i>Geophilophagus</i> Goux, 1950	-	-	0 species (1)
<i>Insensilla</i> Kurosa, 2009	-	-	0 species (2)
<i>Neobakerdania</i> Khaustov & Minor, 2018	-	-	0 species (1)
<i>Nasutidania</i> Khaustov & Frolov, 2018	-	-	0 species (1)
<i>Nipponophorus</i> Kurosa, 2001	-	-	0 species (2)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Pseudokerdabania</i> Khaustov & Trach, 2012	-	-	0 species (1)
<i>Protoallopymephorus</i> Khaustov & Sazhnev, 2019	-	-	0 species (1)
<i>Protobakerdania</i> Khaustov & Minor, 2018	-	-	0 species (9)
<i>Rackia</i> Mahunka, 1975	-	-	0 species (4)
<i>Rhinopygmephorus</i> Kurosa, 2001	-	-	0 species (4)
<i>Scarabadania</i> Khaustov & Frolov, 2018	-	-	0 species (1)
<i>Sicilipes</i> Cross, 1965	-	-	0 species (4)
<i>Singhalophorus</i> Mahunka, 1979	-	-	0 species (1)
<i>Theriodania</i> Khaustova & Whitaker, 2019	-	-	0 species (1)
<i>Xystrorostrum</i> Mahunka, 1968	-	-	0 species (1)
<i>Zambedania</i> Mahunka, 1972	-	-	0 species (4)
Family Microdispidae Cross, 1965			7 genera (28); 33 + 1 species (~130)
<i>Caesarodispus</i> Mahunka, 1977			9 + 1 species (13)
<i>C. brevipes</i> Mahunka, 1981	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Lorestan province (Borujerd, Goldasht village)	Navabi <i>et al.</i> (2018d)
<i>C. dilatatus</i> Navabi & Hajiqaanbar, 2018	<i>Pheidole</i> sp. (Hym.: Formicidae)	Lorestan province (Borujerd, Goldasht village)	Navabi <i>et al.</i> (2018d)
<i>C. khaustovi</i> Rahiminejad & Hajiqaanbar, 2015	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2015a)
<i>C. minutus</i> (Sevastianov, 1981)	<i>Temnothorax</i> sp. (Hym.: Formicidae); <i>Tetramorium</i> sp. (Hym.: Formicidae); Ants of the subfamily Myrmicinae (Hym.: Formicidae)	Razavi Khorasan province (Kahoo village near Shandiz town); Ardabil province (Gooshe Olia village, vicinity of Meshguin-shahr); Lorestan province (Borujerd, Goldasht village)	Loghmani <i>et al.</i> (2014c); Hajiqaanbar & Sobhi (2018); Navabi <i>et al.</i> (2018d)
<i>C. modestus</i> (Berlese, 1903)	Ant; <i>Messor</i> sp. (Hym.: Formicidae)	Golestan province (Kalaleh); Ardabil province (Koli Olia village, near Meshguin-shahr)	Badoodam <i>et al.</i> (2014); Hajiqaanbar & Sobhi (2018)
<i>C. nodijensis</i> Rahiminejad & Hajiqaanbar, 2015	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2015a)
<i>C. pheidolei</i> Rahiminejad & Hajiqaanbar, 2015	<i>Pheidole</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2015a)
<i>C. samsinaki</i> (Mahunka, 1967)	<i>Furmica rufa</i> L. & <i>Formica</i> sp. (Hym.: Formicidae);	Ardabile province (Meshguin-shahr)	Sobhi <i>et al.</i> (2016a); Hajiqaanbar & Sobhi (2018)
<i>C. shandizensis</i> Loghmani & Hajiqaanbar, 2014	<i>Temnothorax</i> Mayr (Hym.: Formicidae)	Razavi Khorasan province (Kahoo village near Shandiz town)	Loghmani <i>et al.</i> (2014c)
<i>Caesarodispus</i> sp.	soil sample of different crop fields	East Azarbaijan province (southwest parts)	Hashemi Khabir <i>et al.</i> (2013)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Neomicrodispus</i> Hajiqaanbar & Hosseiniaveh, 2014			2 species (3)
<i>N. iranicus</i> Hajiqaanbar & Hosseiniaveh, 2014	<i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); <i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Golestan province (Gorgan)	Hajiqaanbar & Hosseiniaveh (2014); Rahiminejad et al. (2020a, b)
<i>N. lucani</i> Rahiminejad & Seyedein, 2020	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Golestan province (Gorgan)	Seyedein et al. (2020)
<i>Paramicrodispus</i> Khaustov, 2009			2 species (3)
<i>P. crenulatus</i> (Savulkin, 1978)	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae); <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); <i>Gnorimus subcostatus</i> (Mentries) (Col.: Scarabaeidae) & <i>Parandra caspia</i> Ménétries (Col.: Cerambycidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae); soil sample; from a soil sample in vicinity of dry rice cultivation	Golestan province (Gorgan, Sorkhan-Kalateh); Mazandaran province (Noor & Behshahr)	Rahiminejad et al. (2011b, d); Hajiqaanbar et al. (2012a); Hajiqaanbar & Arjomandi, (2019a, b); Seyedein et al. (2019a); Rahiminejad et al. (2020b); Rahiminejad et al. (2022b)
<i>P. scarabidophilus</i> Hajiqaanbar & Rahiminejad, 2012	<i>Oryctes nasicornis</i> L., <i>Gnorimus subcostatus</i> (Menetries) (Col.: Scarabaeidae) and <i>Dorcus parallelus</i> (Say) (Col.: Lucanidae); soil sample under Hornbeam trees (<i>Carpinus</i> sp.); <i>Geotrupes spiniger</i> (Marsham, 1802) (Col.: Geotrupidae)	Golestan province (Gorgan & Golestan forest); Mazandaran province (Tonekabon)	Hajiqaanbar et al. (2012a, d); Badoodam et al. (2015); Katlav et al. (2015d); Rahiminejad et al. (2020a); Rahiminejad et al. (2020b)
<i>Promicrodispus</i> Khaustov, 2017			1 species (4)
<i>P. pumilis</i> (Sevastianov, 1975)	in a rotten log and a soil sample under Oak trees (<i>Quercus</i> sp.)	Golestan province (Gorgan)	Rahiminejad et al. (2020b)
<i>Premicrodispus</i> Cross, 1965			16 species (36)
Subgenus <i>Premicrodispus</i> (<i>Premicrodispoides</i>) Khaustov & Maslov, 2013			0 species (1)
Subgenus <i>Premicrodispulus</i> Khaustov & Chydyrov, 2010			1 species (2)
<i>P. (Premicrodispulus) reductus</i> Khaustov & Chydyrov, 2010	soil sample	Razavi Khorasan province (Jovein city)	Fatehinia et al. (2022)
Subgenus <i>P. (Premicrodispus)</i> Cross, 1965			15 species (33)
<i>P. (Premicrodispus) acuitisetus</i> Khaustov, 2009	<i>Pleurophorus anatolicus</i> Petrovitz	Golestan province (Gonbad'e Kavous)	Badoodam et al. (2015)
<i>P. (P.) akermanae</i> (Sevastianov & Al Douri, 1988)	soil sample; <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae)	Golestan province (Gorgan)	Hosseiniaveh et al. (2013); Rahiminejad et al. (2020a, b)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. (P.) brevisetus</i> Khaustov, 2012	<i>Oxythyrea cinctella</i> Schaum & <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); soil sample; <i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Mazandaran province (Tonekabon); Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2010b, 2011d); Katlav <i>et al.</i> (2015d); Seyedein <i>et al.</i> (2019a); Rahiminejad <i>et al.</i> (2020b)
<i>P. (P.) gorganiensis</i> Rahiminejad & Seyedein, 2020	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2020)
<i>P. (P.) heterocaudatus</i> Khaustov & Chydyrov, 2010	Soil sample	Golestan province (Gorgan)	Seyedein <i>et al.</i> (2019a)
<i>P. (P.) kaszabi</i> (Mahunka, 1964)	soil sample from Sugar beet fields	West Azerbaijan province (Miandoab)	Hajiqanbar & Mahunka (2004)
<i>P. (P.) krczali</i> Khaustov, 2006	<i>Oxythyrea cinctella</i> Schaum (Col.: Scarabaeidae)	Razavi Khorasan province (Shandiz town)	Loghmani <i>et al.</i> (2014)
<i>P. (P.) lineatus</i> (Mahunka, 1986)	soil (vineyards)	Razavi Khorasan province (Kashmar)	Hajiqanbar <i>et al.</i> (2012b)
<i>P. (P.) longicaudus</i> Khaustov, 2006	soil samples from pomegranate orchards; <i>Lucanus ibericus</i> Motschulsky, 1845 (Col.: Lucanidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Khorasan Razavi province (Mahvelat region); Golestan province (Gorgan)	Filekesh <i>et al.</i> (2014); Rahiminejad <i>et al.</i> (2020b); Rahiminejad & Hajiqanbar (2020)
<i>P. (P.) montanus</i> Khaustov, 2006	soil sample in pine timberland	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2020b)
<i>P. (P.) paramaevi</i> Hosseininaveh & Hajiqanbar, 2014	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae); <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae)	Golestan province (Gorgan)	Hosseininaveh <i>et al.</i> (2014); Rahiminejad <i>et al.</i> (2020b)
<i>P. (P.) rackae</i> Khaustov, 2006	<i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); <i>Caccobius schreberi</i> L. (Col.: Scarabaeidae); Soil sample; <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae);	Golestan province (Golestan forest); Ardabil province (Meshguin-shahr)	Badoodam <i>et al.</i> (2015); Sobhi <i>et al.</i> (2017e); Seyedein <i>et al.</i> (2019a); Rahiminejad <i>et al.</i> (2020b); Rahiminejad & Hajiqanbar (2020)
<i>P. (P.) spinosus</i> Hosseininaveh & Hajiqanbar, 2014	<i>Corticeus unicolor</i> Piller & Mitterpacher (Col.: Tenebrionidae); <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); <i>Lucanus ibericus</i> Motschulsky 1845 (Col.: Lucanidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	Golestan province (Gorgan)	Hosseininaveh <i>et al.</i> (2014); Rahiminejad <i>et al.</i> (2020b)
<i>P. (P.) stenops</i> (Mahunka, 1969)	soil sample under Poplar trees (<i>Populus</i> sp.), Soil sample of <i>Tetramorium</i> Mayr (Insecta: Hym.: Formicidae) nest	Golestan province (Gorgan, Sorkhan-Kalateh & Kalalleh)	Rahiminejad <i>et al.</i> 2022b; Janghorbani <i>et al.</i> (2022)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>P. (P.) turkmenus</i> Badoodam & Hajiqaanbar, 2015	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Golestan province (Kallaleh)	Badoodam <i>et al.</i> (2015)
<i>Punicodoxa</i> Mahunka, 1978			1 species (3)
<i>P. termitophila</i> Azhari & Hajiqaanbar, 2018	<i>Anacanthotermes</i> sp. (Isoptera: Hodotermitidae)	Kohgiluyeh and Boyer-Ahmad Province (Gachsaran, Dill village)	Azhari <i>et al.</i> (2018a)
<i>Unguidispus</i> Mahunka, 1970			2 species (6)
<i>U. japonicus</i> Kurosa, 1979	<i>Lasius obscuratus</i> Stitz (Hym.: Formicidae)	Ardabil province (Summering of Sabalan Mountain, near Meshguin shahr)	Hajiqaanbar & Sobhi (2018)
<i>U. okumura</i> Kurosa, 1979	associated with ants extracted from rotten logs	Mazandaran province (Western parts)	Abbasi-Moqadam <i>et al.</i> (2014)
<i>Afrodispus</i> Khaustov, 2017	-	-	0 species (1)
<i>Cochlodispus</i> Mahunka, 1972	-	-	0 species (11)
<i>Dolichodispus</i> Khaustov, 2006	-	-	0 species (2)
<i>Ethiodispus</i> Khaustov, 2017	-	-	0 species (1)
<i>Glyphidomastax</i> Cross, 1965	-	-	0 species (1)
<i>Microdispus</i> Paoli, 1911	-	-	0 species (15)
<i>Myrmecodispus</i> Cross, 1965	-	-	0 species (1)
<i>Paraphyllodispus</i> Khaustov & Minor, 2016	-	-	0 species (1)
<i>Parapunicodoxa</i> Khaustov <i>et al.</i>, 2018	-	-	0 species (1)
<i>Peponocara</i> Cross, 1965	-	-	
<i>Perperipes</i> Cross, 1965	-	-	0 Species (1)
<i>Phyllodispus</i> Mahunka, 1970	-	-	0 species (8)
<i>Proreductodispus</i> Khaustov & Tolstikov, 2015	-	-	0 species (1)
<i>Pseudomicrodispus</i> Khaustov, 2017	-	-	0 species (3)
<i>Reductodispus</i> Mahunka, 1977	-	-	0 species (1)
<i>Rhombomicrodispus</i> Khaustov, 2017	-	-	0 species (1)
<i>Rostrodispus</i> Mahunka, 1969	-	-	0 species (5)
<i>Sidorchukdispus</i> Khaustov <i>et al.</i>, 2019	-	-	0 species (1)
<i>Scutodispus</i> Mahunka & Mahunka-Papp, 1994	-	-	0 species (1)
<i>Tubulodispus</i> Mahunka, 1975	-	-	0 species (1)
<i>Vietodispus</i> Mahunka, 1975	-	-	0 species (1)
Family Scutacaridae Oudemans, 1916			7 genera (26); 63 species + 8 (> 810)
<i>Archidispus</i> Karafiat, 1959			11 species (~70)
<i>A. armatus</i> (Karafiat, 1959)	an unidentified staphylinid beetle (Col.: Staphylinidae)	Mazandaran province (Tonekabon)	Katlav <i>et al.</i> (2015d)
<i>A. bembidii</i> (Karafiat, 1959)	<i>Acuapalpus</i> sp. & <i>Pterostichus</i> sp. (Col.: Carabidae)	Mazandaran province (Tonekabon)	Katlav <i>et al.</i> (2015d); Katlav <i>et al.</i> (2014b)
<i>A. conspicuous</i> Kurosa, 1978	an unidentified carabid beetle	Mazandaran province (Tonekabon)	Katlav <i>et al.</i> (2015d)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>A. esfarayenicus</i> Hajiqanbar & Khaustov, 2014	under elytra of a carabid beetle, <i>Elaphropus (Tachyura) diabrachys</i> (Kolenati) (Col.: Carabidae)	North Khorasan province (Esfarayen)	Hajiqanbar & Khaustov (2014)
<i>A. insolitus</i> (Kurosa, 1974)	under elytra and on mesothorax of beetles of the families Tenebrionidae, Elatteridae, Meloidae & Scarabaeidae	Hormozgan province (Sirik)	Mortazavi <i>et al.</i> (2014a)
<i>A. insulanus</i> (Delfinado, Baker & Abbatiello, 1976)	soil, herbal and litter samples of crops	East Azarbaijan province	Bagheri <i>et al.</i> (2006)
<i>A. irregularis</i> Katlav & Hajiqanbar, 2016	<i>Bledius</i> sp. (Col.: Staphylinidae)	Mazandaran province (Tonekabon)	Katlav <i>et al.</i> (2016)
<i>A. longitarsus</i> (Delfinado, Baker & Abbatiello, 1976)	soil, herbal and litter samples of crops	East Azarbaijan province	Bagheri <i>et al.</i> (2006)
<i>A. minor</i> (Karafiat, 1959)	<i>Amara (Amara)</i> sp., <i>Harpalus</i> sp. (Col.: Carabidae)	Razavi Khorasan province (Shandiz town); Mazandaran province (Miankaleh peninsula)	Loghmani <i>et al.</i> (2014); Hajiqanbar & Arjomandi (2019a)
<i>A. parapicola</i> (Delfinado, Baker & Abbatiello, 1976)	soil, herbal and litter samples of crops	East Azarbaijan province	Bagheri <i>et al.</i> (2006)
<i>A. szaboï</i> Mahunka, 1977	<i>Amara</i> sp. (Col.: Carabidae)	Golestan province (Bandar-e-Turkmen)	Rahiminejad & Hajiqanbar (2020)
<i>Heterodispus</i> Paoli, 1911			2 species (35)
<i>H. turkmenistaniensis</i> Khaustov & Chydyrov, 2005	<i>Scarites (Scarites) procerus eurytus</i> Fischer von Waldheim (Col.: Carabidae); <i>Adoretus persicus</i> Reitter (Col.: Scarabaeidae); <i>Blaps mortisaga</i> Reitter (Col.: Tenebrionidae)	Kerman province (Rafsanjan); Lorestan province (Borujerd); Ardabil provinces (Meshguin-shahr, Koli Olia village)	Mortazavi & Hajiqanbar (2012b); Navabi <i>et al.</i> (2017); Sobhi <i>et al.</i> (2017a)
<i>H. verrucosus</i> Mahunka & Rohde, 1970	Pagoda tree (<i>Sophora alopecuroides</i> L.); cotton field soil samples	Ardabil & Hamedan provinces	Mahunka & Rohde (1970); Haddad-Iraninejad (1998); Khanjani (1996)
<i>Imparipes</i> Berlese, 1903			24 species + 8 (~200)
Subgenus <i>I. (Telodispus)</i> Karafiat, 1959			0 species (17)
Subgenus <i>I. (Apidacarus)</i> Ebermann & Fain, 2002			1 species (3)
<i>I. (A.) paulyi</i> Ebermann & Fain, 2002	<i>Halictus</i> spp. & <i>Nomiapis</i> sp. (Hym.: Halictidae)	Razavi Khorasan province (Dargaz and Nokhandan towns)	Loghmani <i>et al.</i> (2014)
Subgenus <i>I. (Sporichneuthes)</i> Ebermann, 1998			1 species (6)
<i>I. (S.) intermedius</i> Paoli, 1911	<i>Onthophagus</i> sp. (Col.: Scarabaeidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2015b); Rahiminejad & Hajiqanbar (2020)
Subgenus <i>I. (Imparipes)</i>			22 species + 8 (~200)
<i>I. (Imparipes) burgeri</i> Ebermann & Jagersbacher-Baumann, 2013	Bees (<i>Lasioglossum clypeiferellum</i> (Strand))	Fars province	Kiani Bakiani <i>et al.</i> (2016)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>I. (I.) comatus</i> Mahunka, 1970	ants (<i>Formica</i> sp.)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>I. (I.) dilatatus</i> Mahunka & Zaki, 1982	soil samples	Mazandaran province (Chahar Dangeh)	Davari <i>et al.</i> (2022)
<i>I. (I.) gagati</i> Khaustov, 2008	<i>Messor caducus</i> (Victor) (Hym.: Formicidae)	Lorestan Province (Borujerd, Fial village)	Navabi <i>et al.</i> (2018a)
<i>I. (I.) hajiqaanbari</i> Rahiminejad, 2022	alates of <i>Lasius</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2022a)
<i>I. (I.) histicinus</i> Berlese, 1903	<i>Cataglyphis</i> cf. <i>nodus</i> (Brulle), <i>Temnothorax</i> sp., <i>Messor</i> sp. & alates of <i>Lasius</i> sp. (Hym.: Formicidae)	Razavi Khorasan province (Sabzevar & Dargaz towns); Ardabil Province (Meshguin-shahr); Golestan province (Gorgan)	Hajiqaanbar (2010b); Loghmani <i>et al.</i> (2014); Sobhi <i>et al.</i> (2017a); Rahiminejad <i>et al.</i> (2022a)
<i>I. (I.) ignotus</i> Khaustov & Chydyrov, 2004	ants (<i>Camponotus</i> sp.)	Lorestan Province (Borujerd, Sheykh Miri-ye Sadat village)	Navabi <i>et al.</i> (2018a)
<i>I. (I.) imaginatus</i> Mahunka, 1981	ants (<i>Tetramorium</i> sp.)	Ardabil province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>I. (I.) lentus</i> Khaustov, 2008	ants (<i>Tetramorium</i> sp.)	Ardabil Province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>I. (I.) lituanicus</i> Lazauskene & Sevastianov, 1974	alates of <i>Lasius</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2022a)
<i>I. (I.) longisetosus</i> Willmann, 1951	soil sample of alfalfa fields; soil sample of different crop fields	East Azarbaijan province (Western & southwest parts)	Lotfollahi <i>et al.</i> (2008b); Hashemi Khabir <i>et al.</i> (2013)
<i>I. (I.) malus</i> Khaustov, 2008	<i>Tetramorium</i> sp. & <i>Camponotus</i> sp. (Hym.: Formicidae)	Lorestan Province (Borujerd, Sheykh Miri-ye Sadat village)	Navabi <i>et al.</i> (2018a)
<i>I. (I.) moderatus</i> Khaustov, 2008	under the mesosternum of two beetles <i>Drasterius bimaculatus</i> (Rossi) (Col.: Elateridae)	Lorestan Province (Borujerd, Sheykh Miri-ye Sadat village)	Navabi <i>et al.</i> (2018a)
<i>I. (I.) morosus</i> Khaustov, 2008	removed from ventral body surfaces of <i>Camponotus oasium</i> Forel (Hym.: Formicidae)	Lorestan Province (Borujerd, Sheykh Miri-ye Sadat village)	Navabi <i>et al.</i> (2018a)
<i>I. (I.) obsoletus</i> Rack, 1966	alates of <i>Lasius</i> sp. (Hym.: Formicidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2022a)
<i>I. (I.) parapicosimilis</i> Metwali, 1981	fabaceous field soil samples	Hamedan province	Khanjani & Kamali (1993); Modarres-Awal (1997)
<i>I. (I.) placidus</i> Khaustov & Chydyrov, 2004	ants (<i>Tetramorium</i> sp.)	Ardabil Province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>I. (I.) rafalskii</i> Dastych, 1978	bees (<i>Andrena</i> sp.)	Ardabil Province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>I. (I.) sevastianovi</i> Khaustov, 2008	<i>Lasius flavoniger</i> Seifert (Hym.: Formicidae)	Mazandaran province (Behshahr, Abbas-Abad forest)	Hajiqaanbar & Arjomandi (2019a)
<i>I. (I.) tataricus</i> Sevastianov, 1964	soil sample of alfalfa fields; soil sample of different crop fields	East Azarbaijan province (Western & southwest parts)	Lotfollahi <i>et al.</i> (2008b); Hashemi Khabir <i>et al.</i> (2013)
<i>I. (I.) tenuis</i> Mahunka, 1981	unidentified ants; ants (<i>Tetramorium</i> sp)	Kerman Province (Lalehzar city); Ardabil Province (Meshguin-shahr)	Mortazavi <i>et al.</i> (2016); Sobhi <i>et al.</i> (2017a)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>I. sp. nr. parapicola</i> Delfinado <i>et al.</i> , 1976	alhagi, alfalfa, cotton; parasitic on mining bees	Ardabil & Hamedan provinces	Haddad-Irani-Nejad (1998); Khanjani (1996)
<i>Imparipes sp.</i>	soil sample	East Azerbaijan province	Fathipour (1994)
<i>Imparipes sp.</i>	house	West Azerbaijan province	Mirfakhraei (1994)
<i>Imparipes sp.</i>	samples from strawberry fields	Kurdistan province	Mansour ghazi <i>et al.</i> (2006)
<i>Imparipes sp.</i>	soil sample	Khuzestan province (Ahvaz)	Baharloo <i>et al.</i> (2006)
<i>Imparipes sp.</i>	bees (Apoidea)	Chaharmahal and Bakhtiari province	Nazari <i>et al.</i> (2019)
<i>Imparipes sp.</i>	soil sample of alfalfa fields	East Azarbaijan province (Western parts)	Lotfollahi <i>et al.</i> (2008b)
<i>Imparipes sp.</i>	soil sample of alfalfa fields	East Azarbaijan province (Western parts)	Lotfollahi <i>et al.</i> (2008b)
<i>Imparipes sp.</i>	potato's fields	Some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Kerman provinces)	Baradaran <i>et al.</i> (2010)
<i>Lophodispus</i> Kurosa, 1972			1 species (3)
<i>L. tapinoma</i> Sobhi & Hajiqaanbar, 2017	<i>Tapinoma</i> sp. Förster, 1855 (Hym.: Formicidae)	Ardabil province (Ahmad-Abad village, vicinity of Meshguin-shahr)	Sobhi <i>et al.</i> (2017d)
<i>Pygmodispus</i> Paoli, 1911			2 species (33)
Subgenus <i>P. (Allodispus)</i> Paoli, 1911			1 species (8)
<i>P. (Allodispus) latisternus</i> Paoli, 1911	soil sample	West Azarbaijan province (Miandoab); Golestan province (Gorgan); Tehran province (Rey county)	Ebermann <i>et al.</i> (2003); Zafari <i>et al.</i> (2017); Rahiminejad <i>et al.</i> (2020b)
Subgenus <i>P. (Pygmodispus)</i> Paoli, 1911			1 species (25)
<i>P. (Pygmodispus) calcaratus</i> Paoli, 1911	soil sample; soil sample of alfalfa fields	West Azarbaijan province (Miandoab); East Azarbaijan province (Western parts)	Ebermann <i>et al.</i> (2003); Lotfollahi <i>et al.</i> (2008b)
<i>Scutacarus</i> Gros 1845			22 species + 3 (~800)
Subgenus <i>S. (Variatipes)</i> Paoli, 1911			3 species + 1 (31)
<i>S. (Variatipes) contigus</i> Delfinado <i>et al.</i> , 1976	pagoda tree (<i>Sophora alopecuroides</i>)	Hamedan province	Khanjani (1996)
<i>S. (V.) eucomus</i> (Berlese, 1908)	samples from strawberry fields; soil sample of alfalfa fields; soil sample of different crop fields	Kurdistan province; East Azarbaijan province (Western & southwest parts)	Mansour ghazi <i>et al.</i> (2006); Lotfollahi <i>et al.</i> (2008b); Hashemi Khabir <i>et al.</i> (2013)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>S. (V.) quadangularis</i> (Paoli, 1911)	soil sample; samples from strawberry fields; soil sample of alfalfa fields	West Azarbaijan province (Miandoab; Kurdistan province; East Azarbaijan province (Western parts)	Ebermann <i>et al.</i> (2003); Mansour ghazi <i>et al.</i> (2006); Lotfollahi <i>et al.</i> (2008b)
<i>Scutacarus (Variatipes) sp.</i>	Potato's fields	some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Kerman provinces)	Baradaran <i>et al.</i> (2010)
Subgenus <i>S. (Scutacarus)</i> Gros, 1845			19 species + 2 (~400)
<i>S. (Scutacarus) acarorum</i> (Goeze, 1780)	<i>Bombus argillaceus</i> (Scopoli) & <i>Bombus</i> sp. (Hym.: Apidae)	Ardabil province; Mazandaran province (Behshahr)	Kazemi & Kamali (2006); Hajiqanbar & Arjomandi (2019a)
<i>S. (S.) apodemi</i> Mahunka, 1963	soil sample of alfalfa fields	East Azarbaijan province (Western parts)	Lotfollahi <i>et al.</i> (2008b)
<i>S. (S.) avarus</i> Khaustov, 2008	<i>Formica</i> sp. (Hym.: Formicidae)	Lorestan province (Borujerd, Fial village)	Navabi <i>et al.</i> (2018a, c)
<i>S. (S.) claviger</i> (Paoli, 1911)	<i>Temnothorax</i> sp. (Hym.: Formicidae)	Razavi Khorasan province (Shandiz town)	Loghmani <i>et al.</i> (2014)
<i>S. (S.) communis</i> (Delfinado Baker & Abbatiello, 1976)	soil, herbal and litter samples of crops	East Azarbaijan province	Bagheri <i>et al.</i> (2006)
<i>S. (S.) ebermanni</i> Sobhi & Hajiqanbar, 2017	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Ardabil Province (Koli Olia village, vicinity of Meshguin-shahr)	Sobhi <i>et al.</i> (2017c)
<i>S. (S.) echidna</i> (Berlese, 1905)	soil samples	Mazandaran province (Galugah)	Davari <i>et al.</i> (2022)
<i>S. (S.) fragariae</i> Rack, 1975	Pagoda tree (<i>Sophora alopecuroides</i> L.); grape; Soil, herbal and litter samples of crops	Hamedan, Khuzestan & East Azarbaijan provinces	Darvishzadeh (1997); Khanjani (1996); Bagheri <i>et al.</i> (2006)
<i>S. (S.) hystrichocentrus</i> Sevastianov, 1983	<i>Parandra caspia</i> (Col.: Cerambycidae)	Mazandaran province (Behshahr, Abbas-Abad forest)	Hajiqanbar & Arjomandi (2019a)
<i>S. (S.) iranicus</i> Ebermann, Hajiqanbar & Haddad, 2003	<i>Pleurophorus anatolicus</i> Petrovitz & <i>P. pannonicus</i> Petrovitz (Col.: Scarabaeidae); soil sample of alfalfa fields; <i>Rhyssmodes orientalis</i> Mulsant & Godart (Col.: Scarabaeidae)	West Azarbaijan province (Miandoab); East Azarbaijan province (Western parts); Razavi Khorasan province (Gonabad & Bajestan towns)	Ebermann <i>et al.</i> (2003); Hajiqanbar (2008); Lotfollahi <i>et al.</i> (2008b); Loghmani <i>et al.</i> (2014)
<i>S. (S.) longitarsus</i> (Berlese, 1905)	soil sample; on button mushroom (<i>Agaricus bisporus</i> (Lange)); <i>Oryctes nasicornis</i> L. (Col.: Scarabaeidae); <i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae); <i>Geotrupes spiniger</i> (Marsham) (Col.: Geotrupidae)	East Azarbaijan province; Alborz province (Karaj); Golestan province (Gorgan)	Fathipour (1994); Kheradmand <i>et al.</i> (2007); Rahiminejad <i>et al.</i> (2020b)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>S. (S.) plumosus</i> (Paoli, 1911)	samples from Strawberry fields	Kurdistan province	Mansour ghazi <i>et al.</i> (2006)
<i>S. (S.) pseudoapodemi</i> Navabi & Hajiqaanbar, 2018	<i>Camponotus oasium</i> Forel (Hym.: Formicidae)	Lorestan province (Borujerd, Goldasht village)	Navabi <i>et al.</i> (2018a)
<i>S. (S.) remissus</i> Khaustov, 2008	<i>Messor</i> sp. (Hym.: Formicidae)	Ardabil Province (Meshguin-shahr)	Sobhi <i>et al.</i> (2017a)
<i>S. (S.) serotinus</i> Sevastianov & Chydyrov, 1992	soil sample	West Azarbaijan province (Miandoab)	Ebermann <i>et al.</i> 2003
<i>S. (S.) shajariani</i> Sobhi & Hajiqaanbar, 2017	<i>Tetramorium</i> sp. (Hym.: Formicidae)	Ardabil province (summering of Sabalan Mountain)	Sobhi <i>et al.</i> (2017c)
<i>S. (S.) shvicki</i> Lazauskene & Sevastianov, 1974	soil sample of alfalfa fields; soil sample of different crop fields; <i>Messor</i> sp. (Hym.: Formicidae)	East Azarbaijan province (Western & southwest parts); Ardabil Province (Meshguin-shahr)	Lotfollahi <i>et al.</i> (2008b); Hashemi Khabir <i>et al.</i> (2013); Sobhi <i>et al.</i> (2017a)
<i>S. (S.) sphaeroideus</i> Karafiati, 1959	hydrophilid beetles (Col.: Hydrophilidae) and <i>Dryops</i> sp. (Col.: Dryopidae); soil sample	Razavi Khorasan & Isfahan provinces; Golestan province (Gorgan, Nodijeh, Sorkhan-Kalateh & Ali-Abad Kenar-Shahr); Guilan province (Rasht)	Hajiqaanbar (2008); Tajodin (2013); Rahiminejad <i>et al.</i> (2020b); Rahiminejad <i>et al.</i> (2022b); Hajizadeh & Hosseini (2022)
<i>S. (S.) subquadratus</i> Khaustov & Chydyrov, 2004	soil sample of alfalfa fields; soil sample of alfalfa fields; <i>Cataglyphis</i> cf. <i>nodus</i> (Brulle) (Hym.: Formicidae); <i>Tricholabiodes</i> sp. (Hym.: Mutillidae); <i>Cataglyphis</i> sp. (Hym.: Formicidae)	East Azarbaijan province (Western parts); East Azarbaijan province; Razavi Khorasan province (Sabzevar, Bajestan, Shandiz & Khalilabad towns); Ardabil Province (Meshguin-shahr)	Lotfollahi <i>et al.</i> (2008b); Lotfollahy <i>et al.</i> (2009); Hajiqaanbar (2010b); Loghmani <i>et al.</i> (2014); Sobhi <i>et al.</i> (2017a)
<i>Scutacarus</i> sp.	alfalfa	Isfahan province	Hatami (1991); Modarres-Awal (1997)
<i>Scutacarus</i> sp.	soil sample of alfalfa fields	East Azarbaijan province (Western parts)	Lotfollahi <i>et al.</i> (2008b)
<i>Thaumatopelevis</i> Mahunka, 1973			1 species (7)
<i>T. lorasiacus</i> Navabi & Hajiqaanbar, 2018	<i>Formica</i> L. & <i>Pheidole</i> Westwood (Hym.: Formicidae)	Lorestan province (Bondizeh village, Borujerd)	Navabi <i>et al.</i> (2018e)
<i>Arachnopes</i> Ebermann, 1984	-	-	0 species (1)
<i>Bruneipes</i> Mahunka & Mahunka-Papp, 1992	-	-	0 species (1)
<i>Coronipes</i> Mahunka, 1972	-	-	0 species (4)
<i>Diversipes</i> Berlese, 1903	-	-	0 species (17)
<i>Geotrupophorus</i> Mahunka, 1970	-	-	0 species (1)
<i>Gerdalbertia</i> Khaustov Hugo-Coetzee & Ermilov, 2017	-	-	0 species (1)
<i>Hauseripes</i> Mahunka & Mahunka-Papp, 1988	-	-	0 species (1)
<i>Lamnacarus</i> Balogh & Mahunka, 1963	-	-	0 species (5)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Nasutiscutacarus</i> Beer & Cross, 1960	-	-	0 species (4)
<i>Parascutacarus</i> Baker & Delfinado, 1975	-	-	0 species (1)
<i>Paulacarus</i> Indira, Rao & Thakur, 1980	-	-	0 species (1)
<i>Peridispus</i> Athias, 1972	-	-	0 species (1)
<i>Reductacarus</i> Mahunka, 1963	-	-	0 species (2)
<i>Rettenmeyerella</i> Mahunka, 1977	-	-	0 species (1)
<i>Rhynchodispus</i> Mahunka, 1969	-	-	0 species (2)
<i>Scrobacarus</i> Mahunka, 1975	-	-	0 species (4)
<i>Scutacaropsis</i> Mahunka, 1973	-	-	0 species (1)
<i>Scutobe</i> Mahunka & Mahunka-Papp, 1994	-	-	0 species (1)
<i>Symbolacris</i> Mahunka, 1973	-	-	0 species (3)
Superfamily Pyemotoidea			2 families (3); 4 genera (9 + 2†); 11 species + 1 (81 + 5†)
Family Acarophenacidae Cross, 1965			3 genera (7 + 1†); 7 species (45 + 3†)
<i>Adactylidium</i> Cross, 1965			1 species (17)
<i>A. morazae</i> Goldarazena & Ochoa, 2001	<i>Haplothrips</i> (<i>Haplothrips</i>) <i>reuteri</i> (Karny) (Thys.: Phlaeothripidae)	East Azerbaijan province (Hadishahr)	Lotfollahi <i>et al.</i> (2016)
<i>Acarophenax</i> Newstead & Duvall, 1918			4 species (10)
<i>A. mahunkai</i> Steinkraus & Cross, 1993	<i>Alphitobius diaperinus</i> Panzer 1797 (Col.: Tenebrionidae); tenebrionid beetle;	Northeastern Iran; Golestan province (Gorgan)	Hajiqanbar (2010a); Rahiminejad <i>et al.</i> (2010a, 2012)
<i>A. rackae</i> Mahunka & Zaki, 1990	<i>Tribolium confusum</i> (Jacquelin du Val) (Col.: Tenebrionidae); associated with stored products	West Azerbaijan province (Urmia); Sistan & Baluchestan province (Sistan)	Hajiqanbar <i>et al.</i> (2011b); Sayadi <i>et al.</i> (2012)
<i>A. sphindi</i> Rahiminejad & Hajiqanbar, 2015	<i>Sphindus</i> sp. (Col.: Sphindidae)	Golestan province (Gorgan)	Rahiminejad & Hajiqanbar (2015)
<i>A. tribolii</i> Newstead & Duwall, 1918	<i>Tribolium confusum</i> F. & <i>T. castaneum</i> (Herbst) (Col.: Tenebrionidae); stored wheat; Stored grain; stored wheat; Stored rice (rice dust and debris)	Kerman province; Tehran & Alborz provinces (Tehran, Varamin, Karaj); West Azarbaijan province; Isfahan province (Isfahan, Kashan & Golpaygan); Guilan province	Ostovan & Saboori (1999); Ardeshtir <i>et al.</i> (2006); Ardeshtir <i>et al.</i> (2008); Ardeshtir & Nematollahi (2008); Noei <i>et al.</i> (2008)
<i>Aethiophenax</i> Mahunka, 1981			2 species (4)
<i>A. luteoli</i> Katlav & Hajiqanbar, 2015	beneath elytra of <i>Epuraea</i> (<i>Haptoncus</i>) <i>luteola</i> Erichson (Col.: Nitidulidae)	Mazandaran province (Tonekabon (Palhamdash village))	Katlav <i>et al.</i> (2015b)
<i>A. mycetophagi</i> Arjomandi & Hajiqanbar, 2017	egg parasitoid of <i>Mycetophagus quadripustulatus</i> (Col.: Mycetophagidae)	Mazandaran province (Kelardasht)	Arjomandi <i>et al.</i> (2017a)
<i>Aegyptophenax</i> Rady, 1992	-	-	0 species (1)
<i>Paracanophenax</i> Cross, 1965	-	-	0 species (8)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Paradactylidium</i> Mahunka, 1975	-	-	0 species (3 + 1†)
<i>Proadactylidium</i> Khaustov, Vorontsov, Perkovsky & Lindquist, 2021	-	-	0 species (2 + 1†)
† <i>Protophenax</i> Magowski, 1994	-	-	0 species (1†)
Family Pyemotidae Amerling, 1861			1 genus (1); 4 species + 1 (27 + 1†)
<i>Pyemotes</i> Amerling, 1861			4 species + 1 (27 + 1†)
<i>P. herfsi</i> (Oudemans, 1936)	household dust; stored grains; stored wheat	West-Azerbaijan province; Golestan province (Gorgan)	Mirfakhraei (1994); Ardeshtir <i>et al.</i> (2008); Ardeshtir & Khormali (2008)
<i>P. scolyti</i> (Oudemans, 1936)	<i>Scolytus amygdali</i> Guerin-Meneville; elm (Parasitic on <i>Scolytus</i> spp.)	Alborz province (Karaj); Tehran province (Tehran)	Ahadiyat <i>et al.</i> (2004); Ostovan (1997); Ostovan & Kamali (1996); Ostovan & Kamali (1997)
<i>P. tritici</i> (LaGreze-Fossot & Montagne, 1851)	<i>Scolytus amygdali</i> Guerin-Meneville; Stored products; human; parasitic on <i>Sitotroga</i> spp. and <i>Ephesia</i> spp. (Lep.: Gelechiidae & Pyralidae))	Alborz province (Karaj); generally distributed	Ahadiyat <i>et al.</i> (2004); Ostovan (1997)
<i>P. ventricosus</i> (Newport, 1850)	<i>Sphenoptera davatchii</i> & <i>Ruguloscolytus mediterraneus</i> (Col.: Buprestidae & Curculionidae)	West-Azerbaijan, Kermanshah, Kurdistan, Markazi, Semann, Tehran & Zanjan provinces	Behdad (1984); Baradaran-Anaraki & Daneshvar (1989); Kamali 1980; Modarres-Aval (1994, 1997); Ostovan & Mosaddegh (1999); Radjab (1969, 1976, 1991); Kamali <i>et al.</i> (2001)
<i>Pyemotes</i> sp.	dry fruits and nuts	West Azerbaijan province (Khoy and Salmas, Boukan, Mahabad, Urmia, Gharehzaadin)	Ardeshtir <i>et al.</i> (2012)
Family Resinacaridae Mahunka, 1976			0 genus (1 + 1†); 0 species (1 + 1†)
<i>Resinacarus</i> Vitzthum, 1927	-	-	0 species (1)
† <i>Protoresinacarus</i> Khaustov & Poinar, 2011	-	-	0 species (1†)
Superfamily Tarsonemoidea			2 families (2); 19 genera (84); 94 species (~840)
Family Tarsonemidae Canestrini & Fanzago, 1877			10 genera (49); 67 species + 6 (~570)
<i>Acarapis</i> Hirst, 1921			3 species (4)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>A. dorsalis</i> Morgenthaler, 1934	honey bee	Chahar Mahal & Bakhtiari, Khuzestan, Khorasan, Mazandaran & East Azerbaijan provinces	Bahreini (1993); Mosaddegh & Bahreini (1994a)
<i>A. externus</i> Morgenthaler, 1931	honey bee	Chahar Mahal & Bakhtiari, Tehran, Lorestan, Mazandaran & Hamedan provinces	Bahreini (1993); Mosaddegh & Bahreini (1994a)
<i>A. woodi</i> (Rennie, 1921)	tracheal parasite of honey bee	Generally distributed	Bahreini (1993); Bahreini & Mosaddegh (1993); Ghasemi & Targari (1991); Modarres-Awal (1997); Mosaddegh & Bahreini (1994a); Sepasgozarian (1976)
<i>Dendroptus</i> Kramer, 1876			1 species (23)
<i>Dendroptus</i> sp.	Apple, plum	Tehran province	Nozari (1992)
<i>Heterotarsonemus</i> Smiley, 1969			2 species (8)
<i>H. magowskii</i> Khaustov, 2001	<i>Orthotomicus erosus</i> (Wollaston) (Col.: Curculionidae: Scolytinae)	Markazi province (west regions: Saveh, Mahallat, Khomeyn, Delijan & Khorheh); Tehran province	Farmahiny-Farahani et al. (2017); Magowski et al. (2017)
<i>H. hajekae</i> Smiley & Moser, 1985	<i>Scolytus multistriatus</i> (Marsham) (Col.: Scolytidae)	Tehran province	Magowski et al. (2017)
<i>Neotarsonemoides</i> Kaliszewski, 1984			7 species (10)
Subgenus <i>Neotarsonemoides</i> s. str.			
<i>N. (N.) evae</i> Magowski, 2002	soil	East Azarbaijan province (Marand)	Gheblealivand et al. (2016c)
<i>N. (N.) lucifer</i> (Schaarschmidt, 1959)	soil	Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar, Zenooz & Jolfa)	Lotfollahi et al. (2010b); Gheblealivand et al. (2016c)
<i>N. (N.) marandicus</i> Gheblealivand, Haddad & Magowski, 2016	litter and soil	East Azarbaijan province (Marand)	Gheblealivand et al. (2016c)
<i>N. (N.) multiplex</i> (Kaliszewski, 1983)	soil	East Azarbaijan province (Jolfa)	Gheblealivand et al. (2016c)
<i>N. (N.) occultus</i> (Kaliszewski, 1983)	litter and soil	East Azarbaijan province (Marand & Jolfa)	Gheblealivand et al. (2016c)
<i>N. (N.) polonicus</i> (Willmann, 1949)	litter and soil	East Azarbaijan province (Marand & Zenooz)	Gheblealivand et al. (2016c)
Subgenus <i>N. (Ototarsonemus)</i> Sharonov & Mitrofanov, 1986			

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>N. (O.) alatus</i> (Livshits, Mitrofanov and Sharonov, 1979)	litter and soil	East Azarbaijan province (Marand & Jolfa)	Gheblealivand <i>et al.</i> (2016c)
<i>Phytonemus</i> Lindquist, 1986			1 species (1)
<i>P. pallidus fragaria</i> (Banks, 1901)	from strawberry farms; soil	Kurdistan province; Tehran province (Malard)	Mirjamali <i>et al.</i> (2008b); Mansour ghazi <i>et al.</i> (2016)
<i>Polyphagotarsonemus</i> Beer & Nucifora, 1965			1 species (2)
<i>P. latus</i> (Banks, 1904)	potato's fields	Kerman province (Jiroft); some parts of Iran (Tehran, Kurdistan, Khorassan Razavi, Esfahan, Markazi, Hamedan & Jiroft)	Namvar & Arbabi (2002); Baradaran <i>et al.</i> (2010)
<i>Pseudotarsonemoides</i> Vitzthum, 1921			2 species (9)
<i>Pseudotarsonemoides scolyti</i> Smiley & Moste, 1974	soil samples	Tehran province (Varamin)	Kheradpir & Pakyari (2011)
<i>P. innumerabilis</i> Vitzthum, 1923	Elm (in galleries and phoretic on <i>Sc. scolytus</i> and <i>Sc. multistriatus</i> (Col.: Scolytidae))	Alborz, Tehran, Guilan & Mazandaran provinces	Ostovan & Kamali (1997)
<i>Steneotarsonemus</i> Beer, 1954			9 species + 2 (74)
<i>S. (Steneotarsonemoides) porrectus</i> Livshitz-Mitrofanov & Sharonov, 1981	soil under cereal grasses	East Azarbaijan province	Gheblealivand <i>et al.</i> (2017)
<i>S. (Stenotarsonemus) acuticlavus</i> Wainstein, 1979	soil; soil under cereal grasses	Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa); East Azarbaijan province	Lotfollahi <i>et al.</i> (2010b); Gheblealivand <i>et al.</i> (2017)
<i>S. (S.) arcuatus</i> Livshitz, Mitrofanov & Sharonov, 1979	soil; soil and litter samples extracted from wild barley (<i>Hordeum</i> sp.) and esfand plant (<i>Peganum harmala</i> L.)	Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa); East Azarbaijan province	Lotfollahi <i>et al.</i> (2010b); Gheblealivand <i>et al.</i> (2017)
<i>S. bancrofti</i> (Michael, 1890)	sugar cane	Khuzestan province	Kamali (1986); Kamali (1990); Kamali (1995); Khalilmanesh (1973); Modarres-Awal, (1994); Modarres-Awal (1997); Sadeghi-Namaghi (1990); Sadeghi-Namaghi & Kamali (1991); Sadeghi-Namaghi & Kamali (1993); Sepasgozarian (1977)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>S. (S.) phragmitidis</i> Schlectendal, 1898	collected from reed, <i>Phragmitidis</i> sp. and Bermuda grass, <i>Cynodon</i> <i>ductylon</i> (L.)	Khorassan Razavi province (Ferdowsi University campus in Mashhad)	Sadeghi Namaghi (2013)
<i>S. (S.) rectus</i> Livshitz, Mitrofanov & Sharonov, 1979	soil under cereal grasses	East Azarbaijan province	Gheblealivand <i>et al.</i> (2017)
<i>S. (S.) spinosus</i> Schaarschmidt, 1959	extracted from horsetail plant (<i>Equisetum</i> sp.)	East Azarbaijan province	Gheblealivand <i>et al.</i> (2017)
<i>S. (S.) spirifex</i> (Marchal, 1902)	extracted from bermuda- grass (<i>Cynodon</i> sp.), wild barley (<i>Hordeum</i> sp.) and soil under cereal grasses	East Azarbaijan province	Gheblealivand <i>et al.</i> (2017)
<i>S. (S.) varicosus</i> Livshitz, Mitrofanov & Sharonov, 1981	extracted from wild barley (<i>Hordeum</i> sp.) and soil under cereal grasses	East Azarbaijan province	Gheblealivand <i>et al.</i> (2017)
<i>Stenotarsonemus</i> sp.	soil sample	Khuzestan province (Ahvaz)	Baharloo <i>et al.</i> (2006)
<i>Stenotarsonemus</i> sp.	arboreal & soil sample of wheat & barley crops	Fars province (Jahrom)	Ebrahimi <i>et al.</i> (2010)
<i>Tarsonemus</i> Canestrini & Fanzago, 1877			40 species + 4 (~250)
<i>T. (Schaarschmidtia) amygdali</i> Magowski, Diduszko & Ahdiyat, 2007	in galleries of <i>Scolytus</i> <i>amygdali</i> (Col.: Scolytidae)	Tehran province	Magowski <i>et al.</i> (2007); Magowski (2010); Magowski <i>et al.</i> (2017)
<i>T. (S.) ips</i> (Lindquist, 1969)	elm; associated with apple bark beetles and <i>Sc.</i> <i>multistriatus</i> (Col.: Scolytidae)	Tehran province; Fars province (Fars Science and Research Center)	Ostovan & Kamali (1997); Arabzadeh <i>et al.</i> (2012)
<i>T. (Tarsonemus) annotatus</i> Livshitz, Mitrofanov & Sharonov, 1979	soil	Northwest of East Azarbaijan province (Sufiyan, Payam, Zenooz, Marand, Shabestar & Jolfa); Northwestern Iran	Lotfollahi <i>et al.</i> (2010a); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) bifurcatus</i> Schaarschmidt, 1959	soil and litter	East Azerbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) bilobatus</i> Suski, 1965	Scotch pine (<i>Pinus silvestris</i> L.); soil	Mazandaran province; Tehran province (Malard); Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa)	Barimani-Varandi (1996); Barimani- Varandi & Kamali (1998); Mirjamali <i>et al.</i> (2008b); Lotfollahi <i>et al.</i> (2010a)
<i>T. (T.) bognari</i> Nemestothy & Mahunka, 1981	soil and litter	East Azerbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) confusus</i> Ewing, 1939	soil	Tehran province (Malard); East Azerbaijan province	Mirjamali <i>et al.</i> (2008b); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) crassus</i> (Schaarschmidt, 1959)	in galleries, phoretic on beetles	Tehran & Guilan provinces	Magowski <i>et al.</i> (2017)
<i>T. (T.) destructor</i> Smiley & Landwer, 1976	bean	Hamedan province	Khanjani (1996)
<i>T. (T.) ellipticus</i> Schaarschmidt, 1959	soil	Tehran province (Malard)	Mirjamali <i>et al.</i> (2008b)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>T. (T.) floricolus</i> Canestrini & Fanzago, 1876	soil and litter	East Azerbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) fusarii</i> Cooreman, 1941	citrus, apple, clover; soil; in galleries, phoretic on beetles	Hamedan & Mazandaran provinces; Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa); Tehran province	Faraji & Kamali (1993); Khanjani (1996); Modarres-Awal (1997); Lotfollahi <i>et al.</i> (2010a); Magowski <i>et al.</i> (2017); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) granarius</i> Lindquist, 1982	rice	Mazandaran province	Faraji (1993); Modarres-Awal (1997)
<i>T. (T.) hermes</i> Suski, 1966	European Silver Fir trees (<i>Abies alba</i>)	Mazandaran province	Barimani-Varandi (1996); Barimani-Varandi & Kamali (1998); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) intextus</i> Kaliszewski, 1993	soil	Northwest of East Azarbaijan province (Sufiyan, Payam, Zenooz, Marand, Shabestar & Jolfa)	Lotfollahi <i>et al.</i> (2010a)
<i>T. (T.) lacustris</i> Schaarschmidt, 1959	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) lenticulatus</i> Gheblealivand, Haddad & Magowski, 2018	litter, soil, apple leave and Russian olive leaves	Northwest of East Azarbaijan province (Sufiyan & Jolfa)	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) limitatus</i> Kaliszewski, 1993	soil	Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa)	Lotfollahi <i>et al.</i> (2010a); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) lobosus</i> Suski, 1965	pomegranate orchards; samples from strawberry fields; soil	Markazi province (Saveh); Kurdistan province; Tehran province (Malard)	Sorush & Kamali (2002); Mansour ghazi <i>et al.</i> (2006); Mirjamali <i>et al.</i> (2008b); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) mazandarani</i> Abbasipour, Taghavi, Kamali & Sahragard, 2006	tea garden	Mazandaran province	Abbasipour <i>et al.</i> (2006)
<i>T. (T.) mixtus</i> Kaliszewski, 1993	soil	Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa)	Lotfollahi <i>et al.</i> (2010a)
<i>T. (T.) monoporus</i> Weis-Fogh, 1947	soil, litter & humus samples	Fars province (southern Kamfiruz region); East Azarbaijan province	Beyzavi <i>et al.</i> (2011); Gheblealivand <i>et al.</i> (2018)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>T. (T.) myceliophagus</i> Hussey, 1963	beehive; soil and litter	Kurdestan province (Sanandaj); East Azarbaijan province	Bahreini <i>et al.</i> (1997); Arbabi & Baradaran (2011); Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) oncodes</i> Kaliszewski, 1993	Soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) pseudolacustris</i> Kaliszewski, 1978	<i>Scolytus amygdali</i> Guerin-Meneville	Alborz province (Karaj)	Ahadiyat <i>et al.</i> (2004); Magowski <i>et al.</i> (2017)
<i>T. (T.) ravus</i> Kaliszewski, 1993	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) saccatus</i> Livshitz, Mitrofanov & Sharonov, 1979	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) schaarschmidtii</i> Mahunka, 1970	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) stammeri</i> Schaarschmidt, 1959	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) subcorticalis</i> Lindquist, 1969	Elm (in galleries of <i>Sc. scolytus</i> and <i>Sc. multistriatus</i> (Col.: Scolytidae))	Guilan, Mazandaran & Tehran provinces	Ostovan & Kamali (1997)
<i>T. (T.) triarcus</i> Lindquist 1969	elm (in galleries of <i>Sc. scolytus</i> and <i>Sc. multistriatus</i> (Col.: Scolytidae))	Guilan, Mazandaran & Tehran provinces	Ostovan & Kamali (1997)
<i>T. (T.) varsoviensis</i> Kaliszewski, 1993	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) violae</i> (Schaarschmidt 1960)	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) virgineus</i> Suski, 1969	soil and litter	East Azarbaijan province	Gheblealivand <i>et al.</i> (2018)
<i>T. (T.) waitei</i> Banks, 1912	pomegranate orchards; beehive; samples from strawberry fields; soil	Markazi province (Saveh); Tehran province (Tehran), Yazd province (Ardakan) & Kermanshah province (Kermanshah); Kurdistan province; Tehran province (Malard); Northwest of East Azarbaijan province (Soofian, Payam, Zenooz, Marand, Shabestar & Jolfa)	Sorush (1994); Sorush & Kamali (2002); Mansour ghazi <i>et al.</i> (2006); Mirjamali <i>et al.</i> (2008b); Lotfollahi <i>et al.</i> (2010a); Gheblealivand <i>et al.</i> (2018)
<i>T. sp. nr. aequalis</i> Livshits <i>et al.</i> , 1976	honey bee hive	Kurdistan province	Mosaddegh (1997)
<i>T. sp. nr. bachmaieri</i> Cooreman, 1958	<i>Scolytus amygdali</i> Guerin-Meneville	Alborz province (Karaj)	Ahadiyat <i>et al.</i> (2004); Mirjamali <i>et al.</i> (2008); Magowski <i>et al.</i> 2017
<i>T. sp. nr. fusarii</i> Cooreman, 1941	Tea	Mazandaran province	Taghavi (1996); Taghavi <i>et al.</i> (1998)
<i>T. sp. nr. kennedyi</i> Smiley & Moser, 1974	<i>Scolytus amygdali</i> Guerin-Meneville	Alborz province (Karaj)	Ahadiyat <i>et al.</i> (2004)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>T. sp. nr. nodosus</i> Schaarschmidt, 1959	citrus	Mazandaran province	Faraji & Kamali (1993); Modarres-Awal (1997)
<i>Tarsonemus sp.</i>	<i>Lucanus ibericus</i> Motschulsky (Col.: Lucanidae)	Golestan province (Gorgan)	Rahiminejad <i>et al.</i> (2020a)
<i>Tarsonemus sp.</i>	stored rice (rice dust and debris)	Guilan province	Noei <i>et al.</i> (2008)
<i>Tarsonemus sp.</i>	fig, grape, sugar cane, sudan grass, alfalfa; honey bee hive	Guilan & Mazandaran provinces, South- Western Iran	Darvishzadeh (1997); Kamali (1986); Kamali & Shishehbor (1989); Modarres-Awal (1997); Mosaddegh (1997); Sadeghi-Namaghi & Kamali (1991); Sadeghi-Namaghi & Kamali (1993)
<i>Tarsonemus n. sp.</i>	tea	Mazandaran province	Taghavi (1996); Taghavi <i>et al.</i> (1998)
<i>Xenotarsonemus</i> Beer, 1954			1 species (25)
<i>X. belemnitoides</i> (Weis-Fogh, 1947)	soil and litter	Tehran province (Malard); East Azerbaijan	Mirjamali <i>et al.</i> (2008b); Gheblealivand <i>et al.</i> (2016b)
<i>Acaronemus</i> Lindquist & Smiley, 1978	-	-	0 species (5)
<i>Alkithoenemus</i> Ochoa & Oconnor, 1996	-	-	0 species (1)
<i>Amcortarsonemus</i> Fain, 1971	-	-	0 species (1)
<i>Arizona</i> Koçak & Kemal, 2008	-	-	0 species (1)
<i>Asiocortarsonemus</i> Fain, 1971	-	-	0 species (1)
<i>Biscutulumnemus</i> Lofego & Feres, 2006	-	-	0 species (1)
<i>Bongotarsonemus</i> Mondal & Karmakar, 2021	-	-	0 species (2)
<i>Ceratotarsonemus</i> DeLeon, 1956	-	-	0 species (6)
<i>Cheylotarsonemus</i> Tseng & Lo, 1980	-	-	0 species (1)
<i>Coreitarsonemus</i> Fain, 1970	-	-	0 species (21)
<i>Crossacarapis</i> Ochoa & Oconnor, 1996	-	-	0 species (1)
<i>Daidalotarsonemus</i> De Leon, 1956	-	-	0 species (37)
<i>Deleonia</i> Lindquist, 1986	-	-	0 species (6)
<i>Eotarsonemus</i> De Leon, 1966	-	-	0 species (1)
<i>Excelsotarsonemus</i> Ochoa & Naskrecki, 1995	-	-	0 species (6)
<i>Ficotarsonemus</i> Ho, 1994	-	-	0 species (2)
<i>Flechtmannus</i> de Moraes, Lindquist & Lofego, 2002	-	-	0 species (1)
<i>Floridotarsonemus</i> Attiah, 1970	-	-	0 species (4)
<i>Fungitarsonemus</i> Cromroy, 1958	-	-	0 species (14)
<i>Giselia</i> Magowski, Lindquist & Moser, 2005	-	-	0 species (1)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Hemitarsonemus</i> Ewing, 1939	-	-	0 species (4)
<i>Iponemus</i> (Beer & Nucifora, 1965)	-	-	0 species (15)
<i>Kaliszewskia</i> Lofego, Demite & de Moraes, 2015	-	-	0 species (1)
<i>Lobotarsonemus</i> Khaustov & Abramov, 2017	-	-	0 species (1)
<i>Nasutitarsonemus</i> Beer & Nucifora, 1965	-	-	0 species (3)
<i>Neodendroptus</i> Ochoa, 1991	-	-	0 species (1)
<i>Ogmotarsonemus</i> Lindquist, 1986	-	-	0 species (3)
<i>Paratarsonemella</i> Ochoa, 1991	-	-	0 species (1)
<i>Podotarsonemus</i> Seeman, Lindquist & Husband, 2018	-	-	0 species (7)
<i>Pseudacarapis</i> Lindquist, 1986	-	-	0 species (1)
<i>Pseudotarsonemus</i> Lindquist, 1986	-	-	0 species (1)
<i>Rhynchotarsonemus</i> Beer, 1954	-	-	0 species (4)
<i>Scutarsonemus</i> Mahunka, 1974	-	-	0 species (3)
<i>Suskia</i> Lindquist, 1986	-	-	0 species (1)
<i>Tarsanonychus</i> Lindquist, 1986	-	-	0 species (1)
<i>Tarsobisulcus</i> Khaustov, Fjellberg & Lindquist, 2022	-	-	0 species (1)
<i>Tarsonemella</i> Hirst, 1923	-	-	0 species (2)
<i>Unguitarsonemus</i> Khaustov, Petrov & Kolesnkiy, 2021	-	-	0 species (1)
<i>Unungujtarsonemus</i> Beer & Nucifora, 1965	-	-	0 species (3)
Family Podapolipidae Ewing, 1922			9 genera (35); 27 species + 7 (~270)
<i>Coccipolipus</i> Husband, 1972			2 species (13)
<i>C. macfarlanei</i> Husband, 1972	<i>Coccinella septempunctata</i> L., <i>Oenopia conglubata</i> L. & <i>Coccinella undecimpunctata</i> L. (Col.: Coccinellidae)	North Khorasan province (Maneh and Samalghan); Northeastern Iran; Kerman province (Rafsanjan); Razavi Khorasan province (Kashmar) & Isfahan province (Semirom); Mazandaran province (Marzanabad); Tehran province (Rey county); Ardabile province (Meshguin-shar)	Hajiqanbar <i>et al.</i> (2007); Hajiqanbar <i>et al.</i> (2008b); Mortazavi <i>et al.</i> (2010b); Hajiqanbar <i>et al.</i> (2011c); Ceryngier <i>et al.</i> (2012); Mortazavi & Hajiqanbar (2012b); Tajodin (2013); Bahramian <i>et al.</i> (2013); Katlav <i>et al.</i> (2015d); Zafari <i>et al.</i> (2017); Sobhi <i>et al.</i> (2017e)
<i>C. hyppodamiae</i> Mcdaniel & Merril, 1969	coccinellid beetle	Northeastern Iran	Hajiqanbar <i>et al.</i> (2008b)
<i>Dorsipes</i> Regenfuss, 1968			3 species (22)
<i>dorsipes</i> species group			
<i>D. saxicolae</i> Hajiqanbar & Husband, 2008	<i>Amara (Paracelia) saxicola</i> Zimmermann (Col.: Carabidae)	Razavi Khorasan province (Dargaz); Northeastern Iran	Hajiqanbar <i>et al.</i> (2008a, b)
<i>inflatus</i> species group			

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Dorsipes</i> sp.	<i>Amara (Paracelia) saxicola</i> Zimmermann (Col.: Carabidae)	Razavi Khorasan (National Park of Tandureh, Dargaz)	Hajiqanbar <i>et al.</i> (2007)
<i>platysmae</i> species group			
<i>D. caspius</i> Katlav & Hajiqanbar, 2014	<i>Pterostichus (Lyrothorax)</i> <i>caspius</i> (Menetries) (Col.: Carabidae)	Mazandaran province (Tonekabon City, Dohezar Forest)	Katlav <i>et al.</i> (2014c)
<i>Eutarsopolipus</i> Berlese, 1913 <i>acanthomus</i> species group			12 species + 4 (70)
<i>E. acinopi</i> Khaustov & Husband, 2004	<i>Acinopus (Acinopus)</i> <i>laevigatus</i> Ménétries (Col.: Carabidae)	Northeastern Iran	Hajiqanbar <i>et al.</i> (2008b)
<i>E. amaraceus</i> Tajodin & Hajiqanbar, 2014	<i>Amara (Amara) aenea</i> (De Geer) (Col.: Carabidae)	Isfahan province (Freydon-shahr)	Tajodin <i>et al.</i> (2014)
<i>E. elongatus</i> Regenfuss, 1963	<i>Amara aenea</i> (Degeer) (Col.: Carabidae)	Ardabile province (Meshguin-shar, Sheikh Azimlo village)	Sobhi <i>et al.</i> (2016b); Sobhi <i>et al.</i> (2017g)
<i>E. harpali</i> Khaustov & Husband, 2004	<i>Harpalus</i> sp. (Col.: Carabidae)	Ardabile province (Meshguin-shar)	Sobhi <i>et al.</i> (2017e)
<i>Eutarsopolipus</i> near <i>crassisetus</i> Regenfuss, 1968	<i>Amara (Paracelia) saxicola</i> Zimmermann (Col.: Carabidae)	North Khorasan province (Maneh & Samalghan)	Hajiqanbar <i>et al.</i> (2007)
<i>Eutarsopolipus</i> sp.	<i>Scarites terricola</i> Bonelli (Col.: Carabidae)	Kerman province (Rafsanjan)	Mortazavi & Hajiqanbar (2012b)
<i>Eutarsopolipus</i> sp.	<i>Pterostichus</i> sp. (Col.: Carabidae)	Kerman province (Rafsanjan)	Mortazavi & Hajiqanbar (2012b)
<i>Eutarsopolipus</i> sp.	<i>Philorhizus</i> sp. (Col.: Carabidae)	Hormozgan province	Mortazavi <i>et al.</i> (2013)
<i>biunguis</i> species group Regenfuss (1968)			
<i>E. dryptus</i> Mortazavi & Hajiqanbar, 2014	subelytral ectoparasite of <i>Drypta lineola</i> MacLeay (Col.: Carabidae)	Hormozgan province (Tezerj, Hajiabad city)	Mortazavi <i>et al.</i> (2014b)
<i>Eutarsopolipus</i> sp.	<i>Drypta lineola</i> MacLeay (Col.: Carabidae)	Hormozgan province	Mortazavi <i>et al.</i> (2013)
<i>myzus</i> species group Regenfuss (1968)			
<i>E. abdominis</i> Regenfuss, 1968	<i>Agonum</i> sp. (Col.: Carabidae)	Mazandaran Province (Western parts & Palhamdasht Village of Tonekabon)	Katlav <i>et al.</i> (2015e); Katlav & Hajiqanbar (2018)
<i>E. anichtchenkoi</i> Hajiqanbar & Mortazavi, 2012	<i>Pterostichus</i> sp. (Col.: Carabidae)	Kerman province (Orzueeyeh)	Hajiqanbar & Mortazavi (2012)
<i>E. gombrooni</i> Hajiqanbar & Mortazavi, 2019	<i>Syntomus lateralis</i> (Motschulsky) (Coleoptera: Carabidae)	Hormozgan province (Siahoo village, vicinity of Bandar Abbas City)	Hajiqanbar <i>et al.</i> (2019b)
<i>E. oconnori</i> Hajiqanbar & Mortazavi, 2019	<i>S. lateralis</i> (Motschulsky) (Col.: Carabidae)	Hormozgan province (Chelogavmishi village, vicinity of Minab County)	Hajiqanbar <i>et al.</i> (2019b)
<i>E. steveni</i> Khaustov, 2010	<i>Chlaenius</i> (<i>Stenochlaenius</i>) <i>coeruleus</i> (Steven) (Col.: Carabidae)	Mazandaran province (Tonekabon)	Katlav <i>et al.</i> (2015d)
<i>E. terricolae</i> Hajiqanbar & Mortazavi, 2012	<i>Scarites terricola</i> Bonelli (Col.: Carabidae)	Kerman province (Anbarabad)	Hajiqanbar & Mortazavi (2012)
<i>Locustacarus</i> Ewing, 1924			1 species (4)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>L. aiolopi</i> Rahmatzaei & Hajiqaanbar, 2021	<i>Aiolopus thalassinus</i> (Fabricius) (Orth.: Acrididae)	Sistan and Baluchestan province (Pelgi-seyed village, vicinity of Zahak)	Rahmatzaei <i>et al.</i> (2021)
<i>Ovacarus</i> Stannard & Vaishampayan, 1971			1 species (3)
<i>O. longisetosus</i> Hajiqaanbar & Husband, 2007	<i>Amara (Paracelia) saxicola</i> Zimmermann (Col.: Carabidae)	North Khorasan Province (Maneh and Samalghan); Northeastern Iran	Hajiqaanbar <i>et al.</i> (2007, 2008b)
<i>Podapolipoides</i> Regenfuss, 1968			3 species (31)
<i>P. anacridii</i> Hajiqaanbar & Joharchi, 2011	from basal hindwings of <i>Anacridium</i> sp. (Orth.: Acrididae)	Yazd province (Tabas)	Hajiqaanbar & Joharchi (2011)
<i>P. chorthippus</i> Majidi & Hajiqaanbar, 2022	recovered from pronotum and near hindwing bases of <i>Chorthippus</i> sp. (Orth.: Acrididae: Gomphocerinae)	Fars province	Majidi <i>et al.</i> (2022a)
<i>P. grassi</i> (Berlese, 1997)	<i>Locusta migratoria</i> L. (Orth.: Acrididae)	Fars and Khuzestan provinces	Ostovan & Saboori (1999)
<i>Podapolipus</i> Rovelli & Grassi, 1888			2 species + 3 (32)
<i>P. khorasanicus</i> Hajiqaanbar, 2013	on abdominal tergites of <i>Opatroides punctulatus</i> Brulle (Col.: Tenebrionidae)	Razavi Khorasan province (Gonabad)	Hajiqaanbar (2013)
<i>P. laricus</i> Majidi & Hajiqaanbar, 2019	under elytra and at the end of the abdomen <i>Trachyderma hispida</i> Forskål (Col.: Tenebrionidae: Pimeliinae)	Fars province (Bogal & Qasem shahi region, vicinity of Lar)	Majidi <i>et al.</i> (2019)
<i>Podapolipus</i> sp.	Samples from Strawberry fields	Kurdistan province	Mansour ghazi <i>et al.</i> (2006)
<i>Podapolipus</i> sp.	<i>Trachyderma hispida</i> (Forskål) (Col.: Tenebrionidae: Pimeliinae)	Fars province	Majidi <i>et al.</i> (2017)
<i>Podapolipus</i> sp.	<i>Larinus (Larinus) pollinis</i> Laicharting (Col.: Curculionidae)	Fars province	Safdarkhani <i>et al.</i> (2022)
<i>Regenpolipus</i> Husband, 1986			1 species (5)
<i>R. madrasensis</i> Husband & Ramaraju, 2006	<i>Anthia sexguttata</i> (Fab.) (Col.: Carabidae)	Razavi Khorassan province (Vicinity of Taibad)	Hajiqaanbar & Khoshnevis (2011)
<i>Tarsopolipus</i> (Husband, 1986)			2 species (9)
<i>T. massai</i> Husband, 1989	<i>Scarabaeus Semipunctatus</i> F., S. (S.) <i>pius</i> (Illiger) & <i>S. armeniacus</i> Ménériès (Col.: Scarabaeidae)	Mazandaran Province (Galugah); Kerman province; Isfahan province (Semirom); East Azerbaijan province	Hajiqaanbar <i>et al.</i> (2007); Hajiqaanbar <i>et al.</i> (2008b); Mortazavi & Hajiqaanbar (2012); Bahramian <i>et al.</i> (2015); Gheblealivand <i>et al.</i> (2016b)
<i>T. husbandi</i> Mortazavi & Hajiqaanbar, 2012	<i>Scarabaeus (Scarabaeus) acuticollis</i> Motschulsky (Col.: Scarabaeidae); <i>Scarabaeus pius</i> (Illiger) (Col.: Scarabaeidae)	Kerman province (Rafsanjan); East Azerbaijan province	Mortazavi & Hajiqaanbar (2012a, b); Ghablaliwand <i>et al.</i> (2016b)
<i>Archipolipus</i> Husband, 1971	-	-	0 species (2)

Table 2. Continued.

Superfamily/Family/Species	Host (Habitat)	Province (City)	References
<i>Bakerpolipus</i> Husband & Sinha, 1970	-	-	0 species (1)
<i>Blaberpolipus</i> Husband & OConnor, 2003	-	-	0 species (1)
<i>Bombacarus</i> Stammer, 1951	-	-	0 species (1)
<i>Buprestapolipus</i> Husband, Ochoa & Naskrecki, 1995	-	-	0 species (1)
<i>Cassidopolipus</i> Husband & Oconnor, 2014	-	-	0 species (1)
<i>Chrysomelobia</i> Regenfuss, 1968	-	-	0 species (25)
<i>Curculapolipus</i> Husband & Kurosa, 2000	-	-	0 species (1)
<i>Cydnipolipus</i> Kurosa & Husband, 1994	-	-	0 species (2)
<i>Dilopolipus</i> Husband, 1984	-	-	0 species (1)
<i>Kurosapolipus</i> Husband & Li, 1993†	-	-	0 species (3)
<i>Locustipolipus</i> Lo, 1990	-	-	0 species (1)
<i>Orthapolipus</i> Husband & Li, 1993	-	-	0 species (3)
<i>Panesthipolipus</i> Husband, 1984	-	-	0 species (1)
<i>Parobia</i> Seeman & Nahrung, 2003	-	-	0 species (5)
<i>Peripolipus</i> Husband, 1984	-	-	0 species (1)
<i>Rhinopolipus</i> Husband & Kurosa, 2000	-	-	0 species (1)
<i>Rhynchopolipus</i> Husband & Flechtmann, 1972	-	-	0 species (3)
<i>Scarabapolipus</i> Husband & Kurosa, 1993	-	-	0 species (5)
<i>Silphopolipus</i> Kurosa, Khaustov & Husband, 2004	-	-	0 species (3)
<i>Simalurapolipus</i> Kurosa & Husband, 2013	-	-	0 species (1)
<i>Stenopolipus</i> Husband, 1984	-	-	0 species (3)
<i>Stigmacarus</i> Feldman-Muhsam & Havivi, 1977	-	-	0 species (2)
<i>Tenebrapolipus</i> Kurosa & Husband, 2001	-	-	0 species (2)
<i>Tetrapolipus</i> Berlese, 1911	-	-	0 species (14)
<i>Wetapolipus</i> Husband & Zhang, 2002	-	-	0 species (1)
†Superfamily Nasutiacaroidea Sidorchuk & Lindquist, 2015	-	-	0 family (1); 0 genus (1); 0 species (1)
†Family Nasutiacaridae Sidorchuk & Lindquist, 2015	-	-	0 genus (1); 0 species (1)
† <i>Nasutiacarus</i> Sidorchuk & Lindquist, 2015	-	-	0 species (1)

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فهرست کنه‌های هترواستیگما (Acari: Trombidiformes) ایران

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چکیده

در این پژوهش، مروری جامع در رابطه با کنه‌های هترواستیگمای ایران انجام گرفته است. تاکنون ۳۱۹ گونه، ۷۰ جنس، ۱۲ خانواده و ۶ بالاخانواده از هترواستیگمایان (Acari: Prostigmata) (از حدود ۲۲۶۵ گونه، ۲۳۲ جنس، ۱۸ خانواده و ۸ بالاخانواده شناسایی شده در جهان) از مناطق مختلف ایران گزارش شده است. این مطالعه تنوع زیاد کنه‌ها هترواستیگمای ایران را آشکار کرده و نشان داد که بیش از ۱۵٪ از کنه‌های هترواستیگما از ایران گزارش شده و همچنین حدود ۴٪ از گونه‌های این کوهورت از ایران شناسایی و توصیف شده‌اند؛ که این دانش مرهون تلاش و پژوهش‌های بسیاری از دانشمندان ایرانی در طول بیش از ۵۰ سال است. در این مقاله، افزون بر آرایه‌های کنه‌های هترواستیگمای ایران، تمامی جنس‌ها، خانواده‌ها و بالاخانواده‌های هترواستیگمایان جهان ذکر شده‌اند.

واژگان کلیدی: تنوع زیستی، فون، پراکنش جغرافیایی، همسفری، بی‌مهرگان خاکزی.

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