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New report of two species and one genera of Psocoptera (Psocodea: Insecta) from Iran

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Abstract

In this study the fauna of Psocoptera was investigated in west part of Iran (Kermanshah and Kordestan provinces) during 2012–2015. The specimens were collected from the dead and dying leaves of trees, grasses and under stones. Among different species of Psocoptera, *Ectopsocus vachoni* BADONNEL, *Lepinotus brunnea* ENDERLEIN and the genus *Belaphotroctes* are new for Iranian fauna. Moreover all of reported species, Genera and families by this study are reported for the first time in Kermanshah and Kordestan provinces.

Key words: Psocids fauna, *Lepinotus brunnea*, *Ectopsocus vachoni*, Iran.

Zusammenfassung

In dieser Studie wird die Fauna von Psocoptera im westlichen Teil des Iran (Provinzen Kermanshah und Kordestan) im Zeitraum von 2012 bis 2015 untersucht. Die Exemplare wurden von den toten und sterbenden Blättern von Bäumen, Gräsern und unter Steinen gesammelt. Unter den verschiedenen Arten von Psocoptera sind *Ectopsocus vachoni* BADONNEL, *Lepinotus brunnea* ENDERLEIN und die Gattung *Belaphotroctes* neu für die iranische Fauna. Speziell für Kermanshah und Kordestan gilt, dass über alle in dieser Arbeit beschriebenen Arten, Genera und Familien für diese Provinzen hier zum ersten Male berichtet wird.

Stichwörter: Psocids fauna, *Lepinotus brunnea*, *Ectopsocus vachoni*, Iran.

1. Introduction

Psocoptera, also known as booklice or psocids are one of the least-known orders of small insects. They have a worldwide distribution and usually colonized on leaves, foliage and barks of ornamental trees, grasses and palms. Some of them live in ground litter, under stones, nests of birds and mammals (BROADHEAD & RICHARDS 1980, 1982; LIENHAD & MIF-SUD 2015) and even in large quantities on stored product commodities under moist condition (NAYAK et al. 2014). About 5700 species of Psocids have been described so far (ZHANG

2011). Psocids are arranged into three suborders: Trogiomorpha, Troctomorpha and Psocomorpha (LIENHARD & SMITHERS 2002, JOHNSON et al. 2003). Psocomorpha is the largest suborder of Psocoptera and containing 30 of the 45 extant families (JOHNSON et al. 2014). At the initiation of this study, the psocid fauna of Iran was poorly known, with only 13 species in 7 family were recorded (NIKPAY 2016; AGHADOKHT et al. 2015; GOL et al. 2015; KHANDEHROO et al. 2015 and 2014; JARAYANI et al. 2014; AHADIYAT & ZANGENEH 2007; JALALIZAND et al. 2005). Therefore it is expected that further research can add more species to the Psocoptera fauna of Iran.

2. Materials & methods

This study was carried out during 2012-2015 in 9 county of Kermanshah province along with the Marivan county (Kordestan Province). The specimens were collected from a total of 16 sites ranging in elevation 1039 m a.s.l. to 2302 m a.s.l. from the dead and dying leaves of different trees (Oak, Pine, Elm, Walnut, Apricot, Palm), grasses and under stones (Table. 1). The Psocids species were collected directly with entomological aspirators, hand or extracted by Berlese funnel. In total 82 specimens were available for study. Most of these were dissected in 75 % ethyl alcohol and identified by Prof. Charles Lienhard Natural History Museum, Geneva, Switzerland. Most of the material mentioned below is deposited in the Psocoptera collection, Natural History Museum, Geneva, Switzerland but a small reference collection of some of the species mentioned is deposited at the department of Entomology, Islamic Azad University, Kermanshah, Iran.

3. Results and discussion

A total of six species, all female, belonging to four genera and three families of Psocoptera were identified from Kermanshah and Kordestan provinces by this research. The information of collected species is presented in Table 1.

Among these species, *Ectopsocus vachoni* and *Lepinotus brunnea* are new for Iranian fauna. It is also the first report of the genus *Belaphotroctes* for the insect fauna of Iran. More ever all of reported species, Genera and families by this study are reported for the first time in Kermanshah and Kordestan provinces. The most frequently encountered species were *Lepinotus reticulatus* and *Liposcelis bostrychophila*. *L. reticulatus* was the most widely distributed species and was found in the largest number of habitats (Table 1).

Table 1: Collecting localities in the west part of Iran.

Species	province/county/village	E	N	Elevation	Habitat
<i>Lepinotus reticulatus</i> ENDERLEIN	Kordestan/Marivan	35°30	046°25	1320	Oak jungle
	Kermanshah/Osmanevand/ Cheshmeh Sorkh	33°58	047°18	1913	Oak jungle
	Kermanshah/Osmanevand/Patat	33°57	047°18	1955	Oak jungle
	Kermanshah/Ghazanchi	34°25	047°02	1330	Pine
	Kermanshah/Dalaho	35°52	043°06	1677	Walnut
	Kermanshah/Eslamabad- e-gharb/Harasam	33°51	046°50	2302	Elm
	Kermanshah/Songhor/Satar	34°49	047°27	1696	Walnut
	Kermanshah/Harssin Chogha kabod village	34°16	047°28	1419	Apricot
	Kermanshah/Paveh	35°01	046°22	1554	Walnut
	Kermanshah/Eslamabad- e-Gharb/Siakh village	34°07	046°36	1442	Grassland
	Kermanshah/Sar-e-pol-e- Zahab/Gerdehno village	34°43	045°48	1039	Walnut
	Kermanshah/Javanrood/Kani gohar village	34°46	046°25	1330	Grassland
	Kermanshah/Kermanshah city	34°20	047°06	1337	Pine
<i>Ectopsocus vachoni</i> BADONNEL	Kermanshah/Kermanshah city	34°20	047°06	1337	Pine
<i>Ectopsocus vishnyakovae</i> SCHMIDT	Kermanshah/Ghazanchi	34°25	047°02	1330	Pine
<i>Belaphotroctes</i> sp.	Kermanshah/Sar-e-pol-e- Zahab/Gerdehno village	34°43	045°48	1039	Walnut
<i>Liposcelis bostrychophila</i> BADONNEL	Kermanshah/Sar-e-pol-e- Zahab/Patagh village	34°24	046°00	1451	Oak jungle
	Kermanshah/Somar	33°53	045°39	1209	Palm
	Kermanshah/Kermanshah city	34°20	047°06	1337	Pine
<i>Liposcelis brunnea</i> MOTSCHULSKY	Kermanshah/Somar	33°53	045°39	1209	Palm
	Kermanshah/Sanbali	34°25	047°17	1917	Oak jungle

3.1. Suborder: Trogiomorpha

Family: Trogiidae

Members of this family are recognized by the following characters: head short and broad; maxillary palpus with conical sensillum on inner side of second segment; hind tibia and tarsus together shorter than abdomen; wings absent or weakly developed (small forewing rudiments are found in some genera); paraprocts with strong anal spine; lacking trichobothria (NEW 1974).

Genus: *Lepinotus*

Lepinotus reticulatus ENDERLEIN, 1905

Material examined: 3♀ collected in the litter around oak trees (*Quercus infectoria*) from Marivan county (N 35°30 E 046°25, elev. 1320) in Kordestan Province, Iran, April 2016; 3♀ collected in the litter around oak trees from Cheshmeh Sorkh village (N 33°58 E 047°18, elev. 1913) in Kermanshah Province, Iran, April 2013; 2♀ collected in the litter around oak trees (*Q. infectoria*) from Patat village (N 33°57 E 047°18, elev. 1955) in Kermanshah Province, Iran, Des 2013; 1♀ collected in the litter around Pine trees (*Pinus eldarica* Medw.) from Ghazanchi village (N 34°25 E 047°02, elev. 1330) in Kermanshah Province, Iran, April 2013; 10♀ collected in the litter around oak trees (*Q. infectoria*) and under stones from Dalaho County (N 35°52 E 043°06, elev. 1667) in Kermanshah Province, Iran, January, 2014; 6♀ collected in the litter around Elm trees (*Ulmus densa* Litv.) from Harasam County (N 33°51 E 046°50, elev. 2302) in Kermanshah Province, Iran, March, 2014; 5♀ collected in the litter around Walnut trees (*Juglans regia* L.) Songhor County, Satar village (N 34°49 E 047°27, elev. 1696) in Kermanshah Province, Iran, May, 2014; 3♀ collected in the litter around Apricot trees (*Prunus armeniaca* L.) Harsin County, Chogha kabod village (N 34°16 E 047°28, elev. 1419) in Kermanshah Province, Iran, June, 2013; 1♀ collected in the litter around Walnut trees (*J. regia*) Paveh County (N 35°01 E 046°22, elev. 1554) in Kermanshah Province, Iran, October, 2013; 3♀ collected in the Grassland, Eslam Abad-e- Gharb County, Siah Khor village (N 34°07 E 046°36, elev. 1442) in Kermanshah Province, Iran, July, 2013; 1♀ collected in the litter around Walnut trees (*J. regia*) Sare pol-e- Zahab County, Gerdehno village (N 34°43 E 045°48, elev. 1039) in Kermanshah Province, Iran, May, 2012; 4♀ collected in the Grassland, Javanrood County, Kanigohar village (N 34°46 E 046°25, elev. 1330) in Kermanshah Province, Iran, May, 2012; 4♀ collected in the litter around Pine trees (*P. eldarica*) from Kermanshah city (N 34°20 E 047°06, elev. 1337) in Kermanshah Province, Iran, April 2014.

Diagnosis: Head pale reddish brown (Figure 1. A), without markings; vertex and frons broad, without epicranial arm; ocelli absent; forewing short, reddish brown with a distinct reticulate pattern and setae; hind wing absent (FEIYANG et al. 2012).

Distribution: This species has been recorded from Turkey, Caucasasia, Georgia, Armenia, Azerbaijan, Lebanon, Syria, Israel, Jordan, Sinai Peninsula (Egypt), Arabian peninsula, Iraq as well as North Africa. (KHANDEHROO et al. 2015). In Iran this species is reported by KHANDEHROO et al. (2015).

3.2. Suborder: Psocpmorpha

Family: Ectopsocidae

Members of this family, which belongs to the family group Homilopsocidea, are characterised by the absence of an areola postica in their wings such as in the family Peripsocidae (SCHNEIDER 2010).

Genus: *Ectopsocus* MCLACHLAN, 1899

Ectopsocus vachoni BADONNEL 1945

Material examined: 1♀ micropterous, collected in the litter around Pine trees (*P. eldarica*) from Kermanshah city (N 34°20 E 047°06, elev. 1337) in Kermanshah Province, Iran, Des 2013.

Diagnosis: Female is characterised as follows: dark brown; forewing short and rudiment (brachypterous form).

Distribution: This species is recorded from different countries such as: Morocco, Chile, France, Great Britain, Greece, Spain, USA, Argentina, Mexico, Guatemala and Western Australia (GARSIA ALDRETE 2002; LIENHARD & SMITHERS 2002). It is the first report of this species from Iran.

Ectopsocus vishnyakovae SCHMIDT, 1992

Material examined: 1♀ brachypterous, collected in the litter around Pine trees (*P. eldarica*) from Ghazanchi village (N 34°25 E 047°02, elev. 1330) in Kermanshah Province, Iran, January 2014.

Diagnosis: Female is characterised as follows: body length 1.7-2.0 mm; dark brown; forewing short (brachypterous form) or complete (macropterous form), tinged with brown; dorsal valvula of gonapophyses (v2) with pointed apex; subgenital plate distally bilobate, lobes elongate, basally broad, tapered, heavily sclerotized, with stout apical spine as well as setae on outer and inner sides. Male unknown (KHANDEHROO et al. 2015).

Distribution: This species occurs in Armenia and Turkmenistan. In Iran this species is reported by KHANDEHROO et al. (2015).

Family: Liposcelididae

This family is belongs to the family group Atropetae. Adult wings are generally pointed apically when fully developed. Body and forewings are generally covered with scales, but occasionally with dense setae (SCHNEIDER 2010).

Genus: *Belaphotroctes* ROESLER, 1943

Material examined: 1♀ collected in the litter around Walnut trees (*J. regia*) Sare pol-e-Zahab County, Gerdehno village (N 34°43 E 045°48, elev. 1039) in Kermanshah Province, Iran, May, 2012.

Diagnosis: This genus is characterized as: Tarsi 3-segmented. Hind tibia usually with at least 1 apical spur. Macropterous forms with compound eyes and 3 ocelli. Micropterous forms with small compound eyes. Apterous forms with at most 2 ommatidia, no

ocelli (Figure 1. B). Maxillary palp with fourth segment ovoid, obviously wider than other segments but not as wide as long (SMITHERS 1990).

Distribution: the different species of *Belaphotroctes* have been recorded in USA, Jamaica, Mexico, Angola and Togo. It is the first record of this species in Iran.

Genus: *Liposcelis*

***Liposcelis bostrychophila* BADONNEL, 1931**

Material examined: 6♀ collected in the litter around oak trees (*Q. infectoria*) from Sare pol-e- Zahab County, Patagh village (N 34°24 E 046°00, elev. 1451) in Kermanshah Province, Iran, September 2013; 1♀ collected in the litter around Pine trees (*P. eldarica*) from Kermanshah city (N 34°20 E 047°06, elev. 1337) in Kermanshah Province, Iran, April 2014; 1♀ collected in the litter around Palm trees (*Phoenix dactylifera* L.) from Somar county (N 33°53 E 045°39, elev. 1209) in Kermanshah Province, Iran, August 2013.

Diagnosis: *L. bostrychophila* has become a rather important pest in houses and warehouses in Europe, Australia and parts of North America (CHARLES & NORMAN 2005). The taxonomy features as follows: the abdominal tergites 3-4 with a posterior membranous band. Sclerotized areas of body pale to medium brown; head and thorax darker than abdomen (Figure1. C). The shoulder bristle is short and not much longer than other setae of edge of lateral lobe of pronotum. The compound eye consisted of 7 ommatidium. Areoles of vertex are arched forward, separated by narrow lines of thin cuticle and have relatively large nodules. Abdominal areoles are similar to areoles of the vertex except they are more transverse oriented (CHIN et al. 2010).

Distribution: This is a widely distributed species; it has been found in Europe, Africa, Madagascar, southeastern Asia, South America, Canada, Mexico and in the states of Florida, Indiana, Idaho and Texas (GARSIA ALDRETE 2002). In Iran it has been reported from Isfahan (GOL et al. 2015).

***Liposcelis brunnea* MOTSCHULSKY, 1852**

Material examined: 1♀ collected in the litter around Palm trees (*Ph. dactylifera*) from Somar county (N 33°53 E 045°39, elev. 1209) in Kermanshah Province, Iran, August 2013; 2♀ collected in the litter around oak trees (*Q. infectoria*) from Kermanshah city, Sanbali village (N 34°25 E 047°17, elev. 1917) in Kermanshah Province, Iran, April, 2015.

Diagnosis: the main characterize of this species as follows: Abdominal terga 3-4 not with a posterior membranous band (at least in the middle). Posterior part of abdomen darkened (abdomen 8-10) (Figure1. D).

Distribution: This is a widely distributed species; it has been found in the most countries such as Belgium, Germany, French, Finland, England, Italy, Greece, Austria, Cyprus, Poland, Spain, North Africa, China, Canada, Mexico and USA. It is the first report of this species from Iran.

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References

- AGHADOKHT P., FEKRAT L. & H. SADEGHI NAMAGHI (2015): First report of *Graphopsocus cruciatus* (Linnaeus) and *Ectopsocus cryptomeriae* (Enderlein) (Psocoptera: Psocomorpha: Stenopsocidae and Ectopsocidae) from Iran. – *Entomofauna* **36**: 217-220.
- AHADIYAT A. & A.M. ZANGENEH (2007): First report of *Ectopsocus briggsi* and *Trichopsocus Dalii* (Psocoptera: Psocomorpha: Ectopsocidae and Trichopsocidae) from Iran. – *Florida Entomologist* **90**: 790-791.
- BROADHEAD E. & A.M. RICHARDS (1980): The Peripsocidae and Psocidae (Psocoptera) of East Africa. – *Systematic Entomology* **5**: 357-397.
- BROADHEAD E. & A.M. RICHARDS (1982): The Psocoptera of East Africa – A taxonomic and ecological survey. – *Biological Journal of the Linnean Society* **17**: 137-216.
- CHIN H.C., JEFFERY J., AHMAD N.W., KIANG H.S., OMAR B., OTHMAN H. & L.H. LIM (2010): First Report of *Liposcelis bostrychophila* Badonnel (Psocoptera: Liposcelidae) as a Museum Insect Pest in Malaysia. – *Sains Malaysiana* **39**(2): 329-331.
- FEIYANG L., XINGYUE L., JINNAN, Z. & H. YUYOU (2012): A newly recorded species of the psocid genus *Lepinotus* Heyden (Psocoptera: Trogiomorpha: Trogiidae) from China. – *Entomotaxonomia* **34**: 606-608.
- GARSIA ALDRETE A.N. (2002): Psocoptera (Insecta) from the Sierra Tarahumara, Chihuahua, Mexico. *Serie Zoologia* **73**(2): 145-156.
- GOL A., KHANDEHROO F., SADEGHI NAMAGHI H. & G. MORAVVEJ (2015): First report of *Lachesilla quercus* Kolbe, 1880 (Psocoptera: Psocomorpha: Lachesillidae) from Iran. – *Entomofauna* **22**: 273-284.
- JALILZAND A.R., HATAMI B., KHAJEHALI J. & H. OSTOVAN (2005): Report of four psocid species for fauna of Iran. – *Journal of Entomological Society of Iran* **25**: 61-62.
- JARAYANI R., TALEBI A., SEDARATIAN A. & E. MOCKFORD (2014): *Liposcelis Paeta* (Psocoptera: Liposcelidae), A new record from Iran. – *Journal of Entomological Society of Iran* **34**: 95-96.
- JOHNSON K.P. & D.H. CLAYTON (2003): The biology, ecology, and evolution of chewing lice (pp. 449-476, 4 figs). – In: PRICE R.D., HELLENTAL R.A., PALMA R.L., JOHNSON K.P. & D.H. CLAYTON (2003), the chewing lice: world checklist and biological overview. Illinois Natural History Survey Special Publication **24**: X+501 pp.
- KHANDEHROO F., MORAVVEJ G., SADEGHI H. & L. FEKRAT (2014): A new species of the family Mesopsocidae (Insecta: Psocoptera) on ash trees from Iran. – *Journal of Entomological Society of Iran* **34**: 69-70.
- KHANDEHROO F., MORAVVEJ G., SADEGHI H. & L. FEKRAT (2015): First report of *Lepinotus reticulatus* and *Ectopsocus vishnyakovae* (Insecta: Psocoptera) from Iran. – *Journal of Entomological Society of Iran* **35** (1): 73-74.

- LIENHARD C. & C.N. SMITHERS (2002): Psocoptera: World Catalogue and Bibliography. – Muse'um d'Histoire Naturelle, Geneva.
- LIENHARD C. & D. MIFSUD (2015): Psocids from Malta (Insecta: Psocodea: 'Psocoptera'), with new synonymy for *Peripsocus stagnivagus* based on the discovery of its first Palaearctic male. – *Zootaxa* **3936**: 251-260.
- NEW T.R. (1974): Handbooks for the identification of British insects; Psocoptera. – The Society and Sold at its Rooms. I (7). 103 pp.
- NIKPAY A. (In press): First report of occurrence of Psocoptera (*Trogium*) *apterum* on sugarcane from Iran. – Sugar Tech.
- SCHNEIDER N. (2010): Psocids (Psocoptera) Chapter 13.2. – *BioRisk* **4** (2): 793-805.
- SMITHERS C.N. (1990): Keys to the Families and Genera of Psocoptera (Arthropoda: Insecta). – Technical Reports of the Australian Museum No. 2. 82 pp.
- ZHANG Z.Q. (2011): Phylum Arthropoda von Siebold, 1848. In *Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness*. – *Zootaxa* **3148**: 99-103.

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A



B



C



D

Figure 1: Psocoptera from West part of Iran. **A:** *Lepinotus reticulatus*; **B:** *Belaphotroctes* sp.; **C:** *Liposcelis bostrychophila*; **D:** *Liposcelis brunnea*. Original photograph: M. Kahrarian.

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