

## Correspondence

### **Introducing some of Arasbaran region's oribatid mites (Acari: Oribatida), with new records for Iran's and East Azerbaijan Province fauna**

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Oribatid mites are a group of arthropods that have had remarkable evolutionary success with regard to species richness and variety of habitats colonized. They have successfully invaded all compartments of the biosphere; and one can find several hundred thousand oribatid mites per square meter in the organic layers of temperate forest soil, represented by more than 100 species (Lebrun & van Straalen 1995). According to the present literature, major faunistic studies of oribatid mites in Iran are limited to Mazandaran and Guilan Provinces (Northern Iran) (Akrami & Saboori 2012; Akrami & Doryanizadeh 2013; Mortazavi *et al.* 2010, 2011); East Azerbaijan and West Azerbaijan Provinces, and Moghan Plain (Northwest Iran) (Haddad Irani-Nejad *et al.* 2000, 2002; Lotfollahi & Haddad Irani-Nejad, 2010; Mirzaie 2010; Akrami & Saboori 2012); Yazd Province (Central Iran) (Akrami & Saboori 2012) and Fars Province (Southern Iran) (Behmanesh *et al.* 2012; Akrami *et al.* 2011; Akrami & Ebrahimi, 2013; Akrami *et al.* 2013).

The Arasbaran forest site currently constitutes the limited territory of Kalibar, Ahar and Jolfa with an area of 160,000 ha in the northwest of Iran. This area is characterized by special climatic features, high biodiversity, presence of rare fauna and flora, and vegetation elements associated with various climates. The Arasbaran forest region is ecologically much less studied than the Hyrcanian forest (Caspian forest) zone. The main soil types are forest brown and calcic brown soils. Soil pH is acidic and becomes more acidic in denser forest areas (pH 5-8) (Talebi *et al.* 2014). On the basis of high densities of oribatid mites in forests soils, which has been shown and emphasized in most diversity studies of this group, it is estimated that Arasbaran forest soils can be rich in oribatid mites. Until today there aren't any faunistic and biological studies on mites in this region, and this is the first faunistic study of mites in this area.

Oribatid mite fauna of Arasbaran region in East Azerbaijan Province, Iran, was studied by taking soil and litter samples during 2012. Each sample contained 2-4 hand held shovels of soil. Samples were transferred to the Acarology Laboratory, University of Tabriz. Mites were extracted with Berlese funnels and stored in 75% ethanol; specimens were cleared in Nesbitt's fluid and mounted in Hoyer's medium on microscope slides. Slides were kept in the oven at 45-50°C for 2-3 weeks. The number of measured specimens (n) is given in parentheses. All measurements are given in micrometer (µm). Specimens are stored in the Acarology Laboratory, Department of Plant Protection, Faculty of Agriculture, University of Tabriz, Tabriz, Iran.

## Results

In this study, 13 species belonging to 13 genera and 10 families were identified, of which three species are new for Iran mite fauna and two families along with one species are new records for the mite fauna of East Azerbaijan Province. New taxa for East Azerbaijan Province and Iran are marked by one and two asterisks, respectively.

### Family Phthiracaridae Perty, 1841

#### *Phthiracarus (P.) lentulus* (Koch, 1841)

*Measurements and material:* Length of aspis: 325–375; length of notogaster: 530–550; height of notogaster: 425–475. (n= 5), soil of forest, August 2012.

*Distribution:* Holarctic region, Angola (Subias 2013) and Iran.

*Province records:* East Azerbaijan Province (Mirzaie 2010); Yazd, Markazi and Mazandaran Provinces (Akrami & Saboori 2012).

#### *Steganacarus (Tropacarus) brevipilus* (Berlese, 1923)

*Measurements and material:* Length of aspis: 200–250; length of notogaster: 530–550; height of notogaster: 200–225. (n= 2), soil of forest, August 2012.

*Distribution:* Western Palearctic (except North) and Iran (Subias 2013).

*Province records:* East Azerbaijan Province (Mirzaie 2010); Guilan Province (Mortazavi *et al.* 2010); Mazandaran and Razavi Khorasan Provinces (Akrami & Saboori 2012).

### Family Oppiidae Grandjean, 1954

#### *Rhinopppia (Rhinopppia) subpectinata* (Oudemans, 1900)

*Measurements and material:* Length of body: 350–400; width of body: 200–225. (n= 5), soil of forest, May 2012.

*Distribution:* Holarctic region (Subias 2013) and Iran.

*Province records:* West Azerbaijan Province (Akrami & Saboori 2012); Guilan Province (Mortazavi *et al.* 2011).

#### *Ramusella (Insculptoppia) insculpta* (Paoli, 1908)

*Measurements and material:* Length of body: 300–330; width of body: 188–200. (n= 10), soil of forest, May 2012.

*Distribution:* Western Palearctic (except North), Eastern Palearctic and Vietnam (Subias 2013).

*Province records:* East Azerbaijan Province (Lotfollahi & Haddad Irani-Nejad 2010). Mazandaran and Markazi Provinces (Akrami & Saboori 2012).

#### *Oppia nitens*\* Koch, 1836

*Measurements and material:* Length of body: 530-560; width of body: 420-440. (n= 5), soil of forest, August 2012.

*Distribution:* Holarctic and Antarctic (Subias 2013).

*Province records:* West Azerbaijan Province (Akrami & Saboori 2012).

*Comment:* This is the first record for East Azerbaijan Province.

#### **Family Tectocephidae Grandjean, 1954**

##### ***Tectocephus velatus* (Michael, 1880)**

*Measurements and material:* Length of body: 300-330; width of body: 180-200. (n= 8), soil of forest, May 2012.

*Distribution:* Almost cosmopolitan (Fischer & Schatz 2013).

*Province records:* East Azerbaijan Province (Mirzaie 2010; Lotfollahi & Haddad Irani-Nejad 2010; Akrami & Saboori 2012); Guilan Province (Mortazavi *et al.* 2011); Mazandaran, Markazi, Hamedan, Yazd and Fars Provinces (Akrami & Saboori 2012).

#### **Family Achipteriidae\* Thor, 1929**

##### ***Parachipteria petiti*\*\* Trave, 1960**

*Measurements and material:* Length of body: 560-650; width of body: 420-550. (n= 4), soil of forest, August 2012.

*Diagnostic characters:* Pedotectum I with tooth. Setae on pteromorphs bases distinctly extend beyond body contour. Porose areas good visible.

*Distribution:* Mediterranean (Subias 2013).

*Comment:* There is no province record of this species in Iran, new record for the mite fauna of Iran. This is the first record of Achipteriidae for East Azerbaijan Province.

#### **Family Punctoribatidae Thor, 1937**

##### ***Punctoribates (Punctoribates) liber* Paulitschenko, 1991**

*Measurements and material:* Length of body: 310-330; width of body: 220-280. (n=10), soil of forest, August-2012.

*Distribution:* Mediterranean and Iran (Subias 2013).

*Province records:* East Azerbaijan Province (Mirzaie 2010; Lotfollahi & Haddad Irani-Nejad 2010); Guilan Province (Mortazavi *et al.* 2011); Mazandaran Province (Akrami & Saboori 2012).

#### **Family Scheloribatidae Jacot, 1935**

##### ***Scheloribates pallidulus*\*\* (Koch, 1841)**

*Measurements and material:* Length of body: 400–420; width of body: 250–300. (n=10), soil of forest, August 2012.

*Diagnostic characters:* The lamellar and the interlamellar setae are thin and feathered, sensillus medium long and fusiform. Anterior margin of pteromorphs and dorsosejugal suture separated by a faint incurvation at the bothridia, anterior half of notogaster with an arched transversal row of light spots. Setae of pteromorphs absent, Legs tridactyl.

*Distribution:* Cosmopolitan (except Antarctic) (Subias 2013).

*Comment:* There is no province record of this species in Iran, new record for the mite fauna of Iran.

### **Family Oribatulidae Thor, 1929**

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

*Measurements and material:* Length of body: 520–530; width of body: 335–350. (n=10), soil of forest, August 2012.

*Distribution:* Holarctic, India (Subias 2013) and Iran.

*Province records:* East Azerbaijan Province (Mirzaie 2010; Lotfollahi & Haddad Irani-Nejad 2010); Guilan Province (Mortazavi *et al.* 2011); Mazandaran Province (Akrami & Saboori 2012).

### **Family Liebstadiidae J. & P. Balogh, 1984**

#### ***Liebstadia similis* (Michael, 1888)**

*Measurements and material:* Length of body: 530–550; width of body: 345–360. (n=10), soil of forest, August 2012.

*Distribution:* Holarctic region, India, New Zealand (Subias 2013) and Iran.

*Province records:* Mazandaran Province (Taghavi *et al.* 1998); East Azerbaijan Province (Lotollahi & Haddad Irani-Nejad 2010; Mirzaie 2010).

### **Family Chamobatidae\* Grandjean, 1954**

#### ***Chamobates (Xiphobates) voigtsi*\*\* (Oudemans, 1902)**

*Measurements and material:* Length of body: 340–345; width of body: 300. (n= 2), soil of forest, May 2012.

*Distribution:* Europe, Caucasia and Central Asia (Fischer & Schatz 2013).

*Diagnostic characters:* Lamellae long, lamellar setae originate near rostral region. Interlamellar setae originate on prodorsum, near dorsosejugal suture. Within epimeral region 2 pairs of thick setae, other setae normal hairlike. Aggenital setae thick, too. Pteromorphs with 1 tip or tooth.

*Comment:* There is no province record of this species in Iran, new record for the mite fauna of Iran. This is the first record of Chamobatidae for East Azerbaijan Province.

### **Family Galumnidae Jacot, 1925**

#### ***Galumna karajica* Mahunka & Akrami, 2001**

*Measurements and material:* Length of body: 570–600; width of body: 500–530. (n= 2), soil of forest, August-2012.

*Distribution:* Iran (Subias 2013).

*Province records:* East Azerbaijan Province (Lotfollahi & Haddad Irani-Nejad 2010). Mazandaran, Yazd and Markazi Provinces (Akrami & Saboori 2012).

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### **References**

- Akrami, M.A. & Doryanizadeh, N. (2013) A new report of four species of *Hermanniella* (Acari: Oribatida: Hermanniellidae) from Iran. *Journal of Entomological Society of Iran*, 33 (1): 95–97 (In Persian with English summary).
- Akrami, M.A. & Ebrahimi, F. (2013) A new species of the genus *Baloghiella* Bulanova-Zachvatkina, 1966 (Oribatida: Haplozetidae) from Iran. *Systematic & Applied Acarology*, 18(4): 396–400.
- Akrami, M.A. & Saboori, A. (2012) *Acari of Iran, Volume 2: Oribatid mites*. University of Tehran Press, 261 pp. (In Persian).
- Akrami, M.A., Majidi, M. & Behmanesh, M. (2013) A new species of oribatid mite from Iran (Acari: Oribatida). *Zoology in the Middle East*, 54(1): 147–149.
- Akrami, M.A., Subias, L.S. & Behmanesh, M. (2011) A new species of *Ramusella* Hammer, 1962 (Acari: Oppiidae), from Fars Province, Iran. *Graellsia*, 67(2): 199–203.
- Behmanesh, M., Akrami, M.A. & Subias, L.S. (2012) A new oribatid mite of genus *Ramusella* (Acari: Oppiidae) from Iran. *Persian Journal of Acarology*, 1(1): 53–58.
- Fischer, B.M. & Schatz, H. (2013) Biodiversity of oribatid mites (Acari: Oribatida) along an altitudinal gradient in the Central Alps. *Zootaxa*, 3626(4): 429–454.
- Haddad Irani-Nejad, K., Kamali, K. & Maleki-Milani, H. (2000) Some pycnonotic brachypyline oribatid mites of cotton fields in Moghan plain. *Iranian Journal of Agricultural Science*, 31 (4): 737–751 (In Persian with English summary).
- Haddad Irani-Nejad, K., Kamali, K. & Maleki-Milani, H. (2002) Pycnonotic brachypyline oribatid mite species of cotton fields in Moghan plain. *Applied Entomology & Phytopathology*, 69 (2): 17–47 (In Persian with English summary).
- Lebrun, P. & van Straalen, N.M. (1995) Oribatid mites prospects for their use in ecotoxicology. *Experimental & Applied Acarology*, 19: 361–79.
- Lotfollahi, P. & Haddad Irani-Nejad, K. (2010) Thirty-seven species of oribatid mites (Acari: Sarcoptiformes: Oribatida) from East Azerbaijan province of Iran with new five genera and six species for Iran fauna. *Munis Entomology & Zoology*, 5: 845–858.


- Mirzaie, M. (2010) *Cryptostigmatic mites fauna of Shendabad area in East Azerbaijan province, Iran*. M.Sc. thesis, Faculty of Agriculture, University of Tabriz, Tabriz, Iran, 189 pp. (In Persian with English summary).
- Mortazavi, Sh., Hajizadeh, J., Akrami, M.A. & Rafatifard, M. (2010) Introduction and identification key for oribatid mites (Acari: Oribatida) of Rash township. *Iranian Journal of Plant Protection Science*, 41(2): 195–205 (In Persian).
- Mortazavi, Sh., Hajizadeh, J., Akrami, M.A. & Rafatifard, M. (2011) Introduction of thirty two species of Brachypylina oribatid mites (Acari: Oribatida: Brachypylina). New records for the fauna of Guilan Province (Iran). *Linzer Biologische Beiträge*, 43(1): 783–792.
- Subias, L.S. (2013) Listado sistematico, sinonimico y biogeografico de los acaros oribatidos (Acariformes, Oribatida) del mundo (exeto fosiles). Available from: <http://www.ucm.es/info/zoo/Artropodos/Catalogo.pdf>. (accessed in May 2013). First version published in *Graellsia* (2004), 60 (numero extraordinario): 3–305.
- Taghavi, A., Kamali, K. & Sahragard, A. (1998) Mites associated with tea plant, *Camellia sinensis* (L.), in western regions of Mazandaran province. *Proceeding of 13th Iranian Plant Protection Congress, Vol. 1, Karaj*, p. 100.
- Talebi, K.S., Pourhashemi, M. & Sajedi, T. (2014) *Forest of Iran: a treasure from the past, a hope for the future*. Plant and Vegetation, Vol. 10, Springer: Dordrecht Heidelberg, 152 pp.

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معرفی برخی از کنه‌های اریباتید منطقه ارسباران (Acari: Oribatida)، همراه با  
گزارش‌های جدید برای فون ایران و استان آذربایجان شرقی

سعیده سادات قبلعلی‌وند و کریم حداد ایرانی نژاد\*

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