



Entomofauna

ZEITSCHRIFT FÜR ENTOMOLOGIE

Band 37, Heft 28: 445-452

ISSN 0250-4413

Ansfelden, 4. Januar 2016

Suctobelbid mites of Iran, with new records and a key for Iranian species (Acari: Oribatida: Suctobelbidae)

Mohammad Ali AKRAMI & Shabnam MORTAZAVI

Abstract

Oribatid mites of the family Suctobelbidae of Iran have been very poorly known and a few studies have been carried out about these mites. In the present study five species, *Suctobelba altvateri* MORITZ, 1970; *Suctobelbella (Flagrosuctobelba) sensillinuda* SHTANCHAEVA & SUBÍAS, 2009; *Suctobelbella (Suctobelbella) diffissa* MORITZ, 1974; *Suctobelbella (Suctobelbella) subtrigona* (OUDEMANS, 1900) and *Suctobelbella (Suctobelbella) singularis* (STRENZKE, 1950) are introduced as new records to the mite fauna of Iran. A key to the Iranian species of the family is given.

Key words: Sarcoptiformes, Suctobelbidae, new records, Iran

Zusammenfassung

Oribatidae Milben der Familie Suctobelbidae aus dem Iran sind sehr wenig bekannt und nur wenige Studien wurden bisher darüber veröffentlicht. In der vorliegenden Arbeit werden 5 Arten als Neufunde für die Milbenfauna des Iran vorgestellt: *Suctobelba altvateri* MORITZ, 1970; *Suctobelbella (Flagrosuctobelba) sensillinuda* SHTANCHAEVA & SUBÍAS, 2009; *Suctobelbella (Suctobelbella) diffissa* MORITZ, 1974; *Suctobelbella (Suctobelbella) subtrigona* (OUDEMANS, 1900) und *Suctobelbella (Suctobelbella) singularis* (STRENZKE, 1950). Ein Bestimmungsschlüssel für die Arten der Familie aus dem Iran wird erarbeitet.

Introduction

Oribatid mites (Acari: Oribatida) are one of the richest groups of Acari with approximately 10,000 described species around the world (SUBÍAS 2014). The majorities of Oribatida inhabit the soil surface and feed on plant litters and fungi and play an important role in the decomposition of organic matter in the soil, nutrient cycling, soil formation and dispersion of fungal spores (BEHAN-PELLETIER & HILL 1978; BEHAN-PELLETIER 1997; SARIAL & BARAN 2013). Among the oribatid mites, the members of the family Suctobelbidae JACOT, 1938 with 23 genera and 330 species (SUBÍAS 2014) represent a group of soil mites rich both in the number of species and in density and have been assigned from all zoogeographical regions. Although, the habitat range of suctobelbid mites is soil and litter and feeding on fungi (SMITH et al. 1998), feeding habits of the over 290 species of these mites are unclear (NORTON & BEHAN-PELLETIER 2009). The family is characterized by teeth on the edge of the rostrum, tubercles on the prodorsum, attenuate-edentate chelicerae (sometimes called sucrotorial), prodorsum with or without paired flat regions (tectopedial fields), simple or geniculate rostral setae and their small body size (170-300 µm) (BALOGH & BALOGH 1992; NORTON & BEHAN-PELLETIER 2009).

The mites of the family Suctobelbidae have been insufficiently studied in Iran, and only five species of the genera *Rhynchobelba* WILLMANN, 1953, *Suctobelba* PAOLI, 1908 and *Suctobelbella* JACOT, 1937 were reported from this country (AKRAMI 2008; MIRZAEI & AKRAMI 2012).

The genus *Rhynchobelba* has a palaeartic distribution with six species and is characterized by the anterior margin of notogaster without teeth or cristae; lamellar knob divided in two separate parts; anterolateral part of prodorsum without rostral teeth, smooth, gradually narrowed anteriorly. The members of *Suctobelba* with a holarctic distribution and 20 species are characterized by a lack of teeth or cristae on anterior border of notogaster; wide rostrum; large rostral teeth; setiform, simple and directed outwards rostral setae; well developed tectopedial fields; undivided lamellar knob; 10 pairs of notogastral setae and 5 pairs of genital setae. The genus *Suctobelbella* with 182 species and three subgenera is the richest genus of the family and has a cosmopolitan distribution. The members of this genus are characterized by having two pairs of teeth on anterior margin of notogaster; indented rostrum; geniculate rostral setae; well-developed tectopedial fields; undivided lamellar knob; 9 pairs of notogastral setae and 6 pairs of genital setae; and flagelliform or spindle-shaped sensilli (in the subgenus *Flagrosuctobelba* HAMMER, 1979) and setiform ones with lanceolate head or claviform (in the subgenus *Suctobelbella* JACOT, 1937) (MAHUNKA & MAHUNKA-PAPP 2001; SHTANCHAEVA & SUBÍAS 2009; MIRZAEI & AKRAMI 2012; SUBÍAS 2014).

The present paper deals with records of five species belonging to this family and an identification key for Iranian suctobelbid species is presented.

Materials and methods

The mites were extracted from soil and litter samples using the Berlese funnel and stored in 75% ethanol, cleared by lactophenol, mounted in Hoyer's medium on microscope slides and examined using light microscope. Body measurements are presented in micrometer (μm). All specimens were maintained in the Acarological Collection, Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran.

Results

In the present paper, all Iranian species of the family Suctobelbidae are listed, among them five species belonging to two genera (*Suctobelba* and *Suctobelbella*) are identified as new records to the mite fauna of Iran.

List of species

Rhynchobelba sp.

Iran locality: Mazandaran Province, Chalus road (185 km. After Karaj) (AKRAMI 2008).

Suctobelba aliena MORITZ, 1970

Iran locality: East Azerbaijan Province, Shabestar, Shendabad (MIRZAI & AKRAMI 2012).

General distribution: Europe and Iran (SUBÍAS 2014).

Suctobelba altvateri MORITZ, 1970

Iran locality: Guilan Province, Rasht, Imamzade Hashem.

Material examined: One specimen, soil under pomegranate trees (*Punica granatum* L., Punicaceae), 30.X.2008.

General distribution: South- central Europe (SUBÍAS 2014).

Note: New record for Iran.

Suctobelba trigona (MICHAEL, 1888)

Iran locality: East Azerbaijan Province, Shabestar, Shendabad (MIRZAI & AKRAMI 2012).

General distribution: Palaearctic (common in western Palaearctic) (SUBÍAS 2014).

***Suctobelbella (Flagrosuctobelba) elegantula* (HAMMER, 1958)**

I r a n l o c a l i t y : East Azerbaijan Province, Shabestar, Shendabad (MIRZAI & AKRAMI 2012).

G e n e r a l d i s t r i b u t i o n : Neotropical, Oriental, and southern Holarctic (southern Palaearctic and U.S.A.: Louisiana) (SUBÍAS 2014).

***Suctobelbella (Flagrosuctobelba) nana* SHTANCHAEVA & SUBÍAS, 2009**

I r a n l o c a l i t y : East Azerbaijan Province, Shabestar, Shendabad (MIRZAI & AKRAMI 2012).

G e n e r a l d i s t r i b u t i o n : Southern Palaearctic: Mediterranean (Caucasus and Spain) and Iran (SUBÍAS 2014).

***Suctobelbella (Flagrosuctobelba) sensillinuda* SHTANCHAEVA & SUBÍAS, 2009**

I r a n l o c a l i t y : Mazandaran Province, Chalus, Namak Abrood.

M a t e r i a l e x a m i n e d : One specimen, soil under forest trees, 14.IX.2003.

G e n e r a l d i s t r i b u t i o n : Mediterranean (Caucasus and Spain) (SUBÍAS 2014).

N o t e : New record for Iran.

***Suctobelbella (Suctobelbella) acutidens* (FORSSLUND, 1941)**

I r a n l o c a l i t y : East Azerbaijan Province, Shabestar, Shendabad (MIRZAI & AKRAMI 2012).

G e n e r a l d i s t r i b u t i o n : Holarctic and Argentina (SUBÍAS 2014).

***Suctobelbella (Suctobelbella) diffissa* MORITZ, 1974**

(= *Suctobelbella (Suctobelbella) italica* (MAHUNKA, 1966))

I r a n l o c a l i t y : Mazandaran Province, Nowshahr.

M a t e r i a l e x a m i n e d : One specimen, soil under box trees (*Boxus hyrcana* Pojark, Buxaceae), 4.VI.2004.

G e n e r a l d i s t r i b u t i o n : Western Palaearctic (except north) (SUBÍAS 2014).

N o t e : New record for Iran.

***Suctobelbella (Suctobelbella) singularis* (STRENZKE, 1950)**

Iran locality: Guilan Province, Rasht, Khomam.

Material examined: One specimen, soil under elm trees (*Ulmus minor* MILL., Ulmaceae), 14.VIII.2008.

General distribution: Palaearctic (Europe: except west, and eastern Palaearctic) and Taiwan [Formosa] (SUBÍAS 2014).

Note: New record for Iran.

***Suctobelbella (Suctobelbella) subtrigona* (OUDEMANS, 1900)**

Iran localities: Fars Province, Shiraz, Arjan plain; Alborz Province, Karaj, College of Agriculture, botanical garden.

Material examined: Two specimens, one from Shiraz: soil under oak trees (*Quercus* sp., Fagaceae), 2.XI.2009 and one from Karaj: soil under maple trees (*Acer* sp., Aceraceae), 2.VI.2004.

General distribution: Holarctic (Palaearctic: common in western Palaearctic and northern Nearctic) and Mexico (SUBÍAS 2014).

Note: New record for Iran.

In conclusion, the following key can be used to identify adults of all known species of Suctobelbidae in Iran.

A key to the known species of Suctobelbidae of Iran

- 1- Anterior margin of notogaster with 2 pairs of teeth [*Suctobelbella*] 2
- Anterior margin of notogaster without teeth 8
- 2- Sensilli club-shaped, fusiform or lanceolate [*S. (Suctobelbella)*] 3
- Sensilli narrowly spindle-shaped or flagellate [*S. (Flagrosuctobelba)*] 6
- 3- Notogastral setae bipectinate (216×109) *S. (S.) diffisa*
- Notogastral setae smooth 4
- 4- Rostrum nose-like; sensilli fusiform with pointed apex, its head with dense long cilia (250×131) *(S.) subtrigona*
- Rostrum short and round; sensilli claviform with nearly rounded apex, smooth 5
- 5- Rostrum with 4 lateral teeth at each side; sensilli clavate-lanceolate, body size small (229×118) *S. (S.) acutidens*
- Rostrum with 2-3 lateral teeth at each side; sensilli clavate, body size large (276×174) *S. (S.) singularis*
- 6- Sensilli smooth, narrow, spindle-shaped, with spin in distal part (216×105)
- Sensilli pubescent and pointed, without distinct apical spine *S. (F.) sensillinuda*
- 7

- 7- Rostrum with 2-3 lateral teeth at each side (184×99)..... *S. (F.) elegantula*
 - Rostrum with 5 lateral teeth at each side (229×110) *S. (F.) nana*
 8- Tectopedial fields absent [*Rhynchobelba*] *Rhynchobelba* sp.
 - Tectopedial fields present [*Suctobelba*] 9
 9- Notogastral setae of median row S-shaped (217×122)..... *S. trigona*
 - Notogastral setae not S-shaped. 10
 10- Prodorsum without folds or reticular sculpture posteriorly to rostral setae; notogastral setae short, not reaching bases of setae of next row; sensilli with long stalk, club weakly granulate, rounded (265×143)..... *S. aliena*
 - Prodorsum with 2-3 folds posteriorly to rostral setae; notogastral setae long, reaching bases of setae of next row; club of sensilli as long as or slightly shorter than stalk, smooth and pointed (230×132)..... *S. altvateri*

Acknowledgements

This project was supported by the research division of Shiraz University, which is greatly appreciated. We are very grateful to Prof. Luis S. Subías (Departamento de Zoología, Facultad de Biología, Universidad Complutense, Ciudad Universitaria, 28040 Madrid, Spain) for confirm the species.

References

- AKRAMI M.A. (2008): Introduction of some mites of the superfamily Oppioidea (Acari: Oribatida) of Mazandaran province. – Proceeding of 18th Plant Protection Congress, Hamedan, Iran: p. 272.
- BALOGH J. & P. BALOGH (1992): The oribatid mites genera of the world Vol. 1. – Hungarian Natural History Museum, Budapest: 263 p.
- BEHAN-PELLETIER V.M. (1997): Oribatid mites (Acari: Oribatida) of the Yukon. – In: DANKS H.V. & J.A. DOWNES (eds): Insects of the Yukon. Biological Survey of Canada (Terrestrial Arthropods), Ottawa: 115-149.
- BEHAN-PELLETIER V.M. & S.B. HILL (1978): Feeding habits and spore dispersal of oribatid mites in the North American arctic. – Rev. Ecol. Biol. Sol. **15**: 497-516.
- MAHUNKA S. & L. MAHUNKA-PAPP (2001): Oribatids from Switzerland V (Acari: Oribatida: Suctobelbidae 2). (Acarologica Genavensia XCVII). – Rev. Suisse Zool. **108**: 355-385.
- MIRZAEI M. & M.A. AKRAMI (2012) : New species records of the family Suctobelbidae (Acari: Oribatida) from Iran. – Türk. J. Zool. **36** (6): 835-837.
- NORTON R.A. & V.M. BEHAN-PELLETIER (2009): Chapter 15, suborder Oribatida. – In: KRANTZ, G.W. & D.E. WALTER (eds), A Manual of Acarology. Texas Tech University Press, Lubbock (TX): 430-564.
- SARIAL E. & S. BARAN (2013): A new species of *Rhynchobelba* WILLMANN, 1953 (Acari: Oribatida: Suctobelbidae) from Turkey. – Türk. Entomol. Derg. **37** (1): 39-48.

- SHTANCHAEVA U.Y. & L.S. SUBÍAS (2009): A review of oribatid mites of the family Suctobelbidae (Acariformes, Oribatida) from the Caucasus. – *Entomol. Rev.* **89** (7): 849-873.
- SMITH I.M., LINDQUIST E.E. & V.M. BEHAN-PELLETIER (1998): Mites (Acari): Assessment of species diversity in the Montane Cordillera Ecozone, online at – http://www.naturewatch.ca/eman/reports/publications/99_montane/mites/mites04.html.
- SUBÍAS L.S. (2014): Listado sistemático, sinonímico y biogeográfico de los ácaros oribátidos (Acariformes: Oribatida) del mundo (excepto fósiles), online at – <http://www.ucm.es/info/zoo/Artrópodos/Catalogo.pdf>. (accessed in February 2014). First version published in *Graellsia* (2004), 60 (número extraordinario): 3-305.

Authors' addresses:

Mohammad Ali AKRAMI*
Department of Plant Protection,
College of Agriculture,
Shiraz University,
Shiraz, Iran.
E-Mail: akrami@shirazu.ac.ir
*Corresponding author

Shabnam MORTAZAVI
Department of Plant Protection,
College of Agriculture,
Guilan University,
Rasht, Iran.

Druck, Eigentümer, Herausgeber, Verleger und für den Inhalt verantwortlich:
Maximilian SCHWARZ, Konsulent f. Wissenschaft der Oberösterreichischen Landesregierung, Eibenweg 6,
A-4052 Ansfelden, Austria; maximilian.schwarz@liwest.at.

Redaktion: Fritz GUSENLEITNER, Biologiezentrum Linz, f.gusenleitner@landesmuseum.at;
Roland GERSTMEIER, Lehrstuhl f. Zoologie, TU München, gerstmei@wzw.tum.de;
Thomas WITT, Tengstraße 33, D-80796 München, thomas@witt-thomas.com
Berthold CLEWING, Akademischer Verlag München, avm@druckmedien.de;
Harald SULAK, Museum Witt München, h.sulak@atelier-sulak.de;

Mitarbeiter: Karin TRAXLER, Biologiezentrum Linz, bio.redaktion@landesmuseum.at;
Heike REICHERT, Museum Witt München, heike_reichert66@web.de;
Erich DILLER, Zool. Staatssammlung München, Erich.Diller@zsm.mwn.de.

Adresse: Entomofauna, Redaktion und Schriftentausch Thomas WITT, c/o Museum Witt München,
Tengstr. 33, 80796 München, Deutschland, thomas@witt-thomas.com;
Entomofauna, Redaktion c/o Fritz GUSENLEITNER, Lungitzerstr. 51, 4222 St. Georgen/Gusen,
Austria, f.gusenleitner@landesmuseum.at.

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Entomofauna](#)

Jahr/Year: 2016

Band/Volume: [0037](#)

Autor(en)/Author(s): Akrami Mohammad Ali, Mortazavi Shabnam

Artikel/Article: [Suctobelbid mites of Iran, with new records and a key for Iranian species \(Acari: Oribatida: Suctobelbidae\) 445-452](#)