Preliminary study of oribatid mites (Acari: oribatida) in Assaluyeh and Lengeh ports, Iran

M. Alikhani*, T. Arkani1, H. Hashemzadeh2, R. Vafaei Shooshtari3

1- Young Researchers Club, Arak Branch, Islamic Azad University, Arak, Iran
2- Islamic Azad University, Arak Branch, Department of Entomology, Arak, Iran
3- Assistant Professor, Entomology Department, Agricultural faculty, Islamic Azad University, Arak, Iran

Abstract

The oribatid mites of south of Iran was studied during 2008-2009. Six genera belonging to six families were collected which, three genera and two species that marked by an asterisk are recorded for the first time from Iran. The species Hypozetes translamellatus has the most abundant in sampling sites. The family of Scheloribatidae (Scheloribates sp.) has the highest total identified species. According to sampling data the families of Scheloribatidae, Tegoribatidae and Oribatulidae have the highest distribution in sampling sites respectively. These species are: Heptacarus* sp., (Lohmanniidae); Damaeolus asperatus* (Berlese, 1904), (Damaeolidae); Oribatula (Zygoribatula) undulata Berlese, 1916, (Oribatulidae); Scheloribates fimbriatus Thor, 1930. S. praecincisus (Berlese, 1910), (Scheloribatidae); Hypozetes* translamellatus* Wallwork, 1965, (Tegoribatidae); Lamellobates* sp., (Mycobatidae).

Key words: Acari, New records, Oribatida, Assaluyeh and Lengeh ports, Iran

Introduction

Oribatid mites are one of the numerically dominant arthropod groups in the organic horizons of most soils. The role of oribatid mites in decomposition, nutrient cycling and soil formation is important (Akrami, 2007). Oribatid mites are mostly known as particle feeding saprophages and mycophages, but opportunistic predation on nematodes and other microfauna and scavengers on small dead arthropoda (necrophagy) are probably underestimated (Norton & Behan-Pelletier, 2009). These mites hold a great potential for using in ecotoxicology due to the structural and functional complexity of their communities, and several peculiarities not found in other arthropods (Lebrun & Van Straalen, 1995).

Faunal lists of oribatid from Iran containing descriptions of several new species have been published by Bayartogtokh & Akrami (2000); Mahunka & Akrami (2001); Haddad Irani-Nejad et al., (2003); Akrami (2007); Bastan et al. (2008); Akrami et al. (2009).

The goal of present study was to determine oribatid mite species of south of Iran (Assaluyeh and Lengeh ports) for the first time.

Material and Methods

Soil and litter samples were taken from Assaluyeh and Lengeh ports at various times during 2008-2009. Each sample contains 2-4 trowels taken from the surface to a soil depth of 15 cm of crop plants and weeds. Samples were transferred to the Laboratory of the Department of Plant Protection, College of Agriculture, Islamic Azad University of Arak. Then, the mites in the soil...
samples were extracted by using a Berlese funnel and preserved in 75% ethanol and cleared in lactophenol. Selected mite specimens were mounted in Hoyer’s medium on glass microscopic slides for identification (Akrami, 2007). The slide mounting techniques mainly based on the method of Krantz (1978).

In a few cases identification of species was not yet possible, in which case the genus name is used, followed by ‘‘sp.’’. All specimens are deposited in the Department of Entomology, Islamic Azad University, Arak Branch, Arak, Iran and some specimens in the collection of Plant Protection, University of Shiraz, Iran.

Results
In total, six genera and five species belonging to six families were collected and identified. Among which, three genera and two species are new records to mite fauna of Iran. Oribatid species were listed below with the information of locality, date, number of specimens and gender.

List of Oribatids and collection data

**Damaeolidae Grandjean, 1965**
*Damaeolus asperatus* (Berlese, 1904)

*Material examined:* Assaluyeh port, Bushehr Province, soil under meadow, 27-XI-2008 (1 ♂).


**Lohmanniidae Berlese, 1916**
*Heptacarus* sp.

*Material examined:* Lengeh port, Hormozgan Province, soil under meadow, 31-VIII-2008 (4 ♀).

*Distribution:* unknown. New record from Iran.

**Mycobatidae Grandjean, 1954**
*Lamellobates* sp.

*Material examined:* Lengeh port, Hormozgan Province, soil under meadow, 1-IX-2008 (1 ♀).

*Distribution:* unknown. New record from Iran.

**Oribatulidae Thor, 1923**
*Oribatula* (*Zygoribatula*) *undulata* Berlese, 1916

*Material examined:* Lengeh port, Hormozgan Province, soil under meadow, 2-IX-2008 (1 ♂); Lengeh port, Hormozgan Province, soil under meadow, 5-IX-2008 (1 ♂).

*Distribution:* Pantropic (except Neotropic) and subtropic (Subias, 2004). Recorded from Iran by Haddad Irani-Nejad *et al*., (2003), Bastan *et al*., (2008) and Lotfollahi *et al*., (2010).

**Scheloribatidae Granjean, 1953**
*Scheloribates praecinctus* (Berlese, 1910)

*Material examined:* Lengeh port, Hormozgan Province, soil under meadow, 2-IX-2008 (2 ♀); Lengeh port, Hormozgan Province, soil under meadow, 1-IX-2008 (1 ♀); Hormozgan Province, soil under meadow, 8-VIII-2008; Lengeh port, Hormozgan Province, soil under meadow, 5-IX-2008 (1 ♂).

*Distribution:* Pantropic and subtropic (Subias, 2004). Recorded from Iran by Bayartogtokh & Akrami (2000).
Scheloribates fimbriatus Thor, 1930

Material examined: Lengeh port, Hormozgan Province, soil under meadow, 6-IX-2008 (6♀ 2♂); Lengeh port, Hormozgan Province, soil under meadow, 31-VIII-2008; Hormozgan province, soil under meadow, 6 IX 2008.


Tegoribatidae Grandjean, 1954

Hypozetes translamellatus Wallwork, 1965

Material examined: Lengeh port, Hormozgan Province, soil under meadow, 2-IX-2008 (1♀ 9♂); Lengeh port, Hormozgan Province, soil under meadow, 8-VIII-2008; Lengeh port, Hormozgan Province, soil under meadow, 5-IX-2008 (3♀ 3♂); Lengeh port, Hormozgan Province, soil under meadow, 6-IX-2008 (2♀); Lengeh port, Hormozgan Province, soil under meadow, 31-VIII-2008 (4♀, 5♂).

Distribution: Ethiopia (Chad and Congo) and Saudi Arabia (Subias, 2004). New record from Iran.

Discussion

Five and forty seven specimens were identified to genus and species level, respectively. One species was recorded exclusively in the Assaluyeh port and 5 genera and 4 species in the Lengeh port ecosystem. All of the species were found in the edaphic substrates.

The family of Scheloribatidae (Scheloribates sp.) had the highest identified species. In the past, Scheloribatidae have been found in early successional habitats in high numbers due to their relatively high fecundity and short life cycle with 2-3 generation per year (Maribie et al., 2011).

According to sampling data, the families of Scheloribatidae, Tegoribatidae and Oribatulidae had the highest distribution in sampling sites respectively. This result is in good accordance with study by Franklin et al. (2006) who, in diversity and distribution of oribatida in Peru and Brazil, found that the species with the largest home ranges was Rostrozetes foevolatus Sellnick, Scheloribates sp. and Galumna sp. registered in more than 65% of the 26 environments.

Moraza and Pena (2005) who study oribatid mite in selected habitats of La Gomera (Canary island, Spain) found that the most frequent species (found in the largest samples) were Zygoribatula frisiae (Oudemans) (66%), Scheloribates laevigatus (Koch) and Tectocepheus sarekensis Trägårdh (36%).

The species of Hy. translamellatus Wallwork had the most numerically specimens in sampling sites. With current study of oribatid mites of south of Iran, little species were identified that comprehensive studies are necessary.

Acknowledgements

I would like to express my sincere thanks to Dr. Valerie Behan-Pelletier Research Scientist from Canadian National Collection of Insects & Arachnids Agriculture and Agri-Food Canada and Dr. M. A. Akrami, Department of Plant Protection, University of Shiraz for identifying the specimens. Financial support of the project was provided by the Islamic Azad University, Arak Branch, Young Researchers Club, Arak, Iran (Project No. 88386).
References


مقاله مقدماتی کندهای Oribatida (Acari) در باند عسلویه و لنگه، ایران

محمود علی خانی، تویج ارکانی، حسین هاشمی‌زاده، رضا وقایی‌شورشی

چکیده

نخستین تعداد نمونه در محل‌های نمونه‌برداری برای استخوان‌های Oribatulidae دارای بیشترین تعداد نمونه در محل‌های نمونه‌برداری بوده است. استخوان‌ها Hypozetes translamellatus دارای بیشترین گونه‌شناسی در بین آنها، ۲ جنس و ۲ گونه که با علامت سازار مشخص شده‌اند برای اولین بار از ایران کارش می‌شود.

دانشگاه آزاد اسلامی، واحد اراک، باشگاه پژوهشگران جوان، اراک، ایران

* mahmud.alikhani@gmail.com

دریافت مقاله (۱۱/۱۰/۲۰۰۹) – تاریخ پذیرش (۹۰/۴/۹)

www.SID.ir