

INCREASING KNOWLEDGE OF THE MITE FAUNA OF THE UNITED ARAB EMIRATES: NEW RECORDS AND A CHECKLIST

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ABSTRACT — Mite fauna of the United Arab Emirates (UAE) is poorly studied. Based on published works, only 26 species (representing three orders, 18 families and 24 genera) were previously reported from coleopteran insects, plants, leaf litter and soil. This paper reports 11 new records of mites from the emirate of Dubai. A checklist of the taxa reported from the UAE to date is presented.

KEYWORDS — Acari; mites; new records; United Arab Emirates; checklist

INTRODUCTION

Faunistic studies on mites of the United Arab Emirates (UAE) are limited. Twenty six species (15 known species, five new to science described from the UAE and six unidentified species) have been reported in previous publications (Vine and Al Abed, 1996; Gassouma, 2005; Environment Agency Abu Dhabi, 2008; Ueckermann, 2008; Den Heyer, 2009; Mahunka, 2009; Al-Deeb and Enan, 2010; Al-Deeb *et al.*, 2011, 2012; Kontschán, 2011). These mites belong to three orders, 18 families and 24 genera (Table 1).

To my knowledge, there is no taxonomic information source that contains the mite fauna of the UAE. To establish a baseline and enhance knowledge for further work, this paper presents a checklist of mites reported from UAE so far and new mite records.

MATERIALS AND METHODS

Samplings were made in January, 2013, from the emirate of Dubai. Mites were sampled by using specialized hand-held aspirators (BioQuip[®], CA, USA) after modifying the collecting chamber by adding a small piece of light cloth. Mite specimens were preserved in plastic vials containing ethyl alcohol (70 %) and then transferred to the Department of Plant Protection, Assiut University, Egypt for examination. Mites were cleared in lactophenol, mounted in Hoyer's medium and studied under a research microscope (BH-2, Olympus[®], Japan).

The main classification works used for the identification of mite taxa were as follows: Anystidae (Otto, 1999), Blattisociidae (Evans and Hyatt, 1960; Christian and Karg, 2006), Caligonellidae (Swift, 1996), Cheyletidae (Ehara, 1962; Fain *et al.*, 2002), Eupodidae (Olivier and Theron, 1997), Phytoseiidae (Chant and McMurtry, 2007), Tetranychidae (Jeppson *et al.*, 1975) and Tydeidae (André, 1980, 2005;

TABLE 1: Checklist of mites reported from United Arab Emirates so far. * New records

Order	Family	Species	Plant or insect host/habitat	Reference
Mesostigmata	Blattisociidae	<i>Cheiroseius nepalensis</i> (Evans and Hyatt, 1960)*	<i>Cynodon dactylon</i> L. (Poaceae)	Present study
		<i>Lasioseius youcefi</i> Athias-Henriot, 1959*	<i>C. dactylon</i>	Present study
	Laelapidae	<i>Hypoaspis rhinocerotis</i> Oudemans, 1925	<i>O. a. arabicus</i>	Al-Deeb <i>et al.</i> 2012
	Phytoseiidae	<i>Cydnoseius negevi</i> (Swirski and Amitai, 1961)*	<i>C. dactylon</i>	Present study
		<i>Neoseiulus makuwa</i> (Ehara, 1972)*	<i>Sesuvium</i> sp. (Aizoaceae)	Present study
		<i>Proprioiseiopsis asetus</i> (Chant, 1959)*	<i>C. dactylon</i>	Present study
	Trachyuropodidae	<i>Leonardiella harteni</i> Kontschán, 2011	Leaf litter	Kontschán 2011
		Uropodidae	<i>Curculanoetus</i> sp.	<i>Rhyncophorus ferrugineus</i> (Olivier, 1790) (Curculionidae)
	<i>Uroobovela</i> sp.		<i>R. ferrugineus</i>	Al-Deeb <i>et al.</i> 2011
	<i>Uropoda orbicularis</i> (Müller, 1776)		<i>R. ferrugineus</i>	Al-Deeb <i>et al.</i> 2011
Sarcoptiformes	Acaridae	<i>Sancassania</i> sp.	<i>Oryctes agamemnon arabicus</i> Fairmaire, 1896 (Scarabaeidae)	Al-Deeb <i>et al.</i> 2012
		<i>Sancassania</i> sp.	<i>O. agamemnon</i> (Burmeister, 1847)	Al-Deeb & Enan 2010
	Epilohmanniidae	<i>Epilohmannia cylindrica cylindrica</i> (Berlese, 1904)	Leaf litter	Mahunka 2009
		<i>Pilagalumna arabica</i>		
	Galumnidae	Bayoumi and Al-Khalifa, 1986	Leaf litter	Mahunka 2009
	Haplozetidae	<i>Haplozetes vindobonensis</i> (Willmann, 1935)	Leaf litter	Mahunka 2009
		<i>Protoribates capucinus</i> Berlese, 1908	Leaf litter	Mahunka 2009
	Oribatulidae	<i>Zygoribatula mabar</i> Mahunka, 2000	Leaf litter	Mahunka 2009
		<i>Z. sharjah</i> Mahunka, 2009	Leaf litter; humid soil; in a pitfall trap	Mahunka 2009
	Scheloribatidae	<i>Scheloribates sacculipunctatus</i> Mahunka, 2009	Leaf litter	Mahunka 2009
		Scutoverticidae	<i>Ethiovertex vanharteni</i> Mahunka, 2009	In a pitfall trap
	Tectocephidae	<i>Tectocephus velatus</i> (Michael, 1880)	Humid soil	Mahunka 2009
	Tegoribatidae	<i>Hypozetes imitator</i> Balogh, 1959	In a pitfall trap	Mahunka 2009

TABLE 1: Continued.

Order	Family	Species	Plant or insect host/habitat	Reference
Trombidiformes	Anystidae	<i>Paratarsotomus</i> sp.*	<i>Convolvulus arvensis</i> L. (Convolvulaceae)	Present study
	Caligonellidae	<i>Molothrognathus</i> sp.*	<i>C. dactylon</i>	Present study
		<i>Neognathus harteni</i> Ueckermann, 2008	Leaf litter	Ueckermann 2008
	Cheyletidae	<i>Hemicheyletia bakeri</i> (Ehara, 1962)*	<i>C. arvensis</i>	Present study
	Cunaxidae	<i>Coleoscirus simplex</i> (Ewing, 1917)	Leaf litter	Den Heyer 2009
		<i>Cunaxa capreolus</i> (Berlese, 1890)	Leaf litter/in a light trap	Den Heyer 2009
	Eupodidae	<i>Eupodes</i> sp.*	<i>C. arvensis</i>	Present study
	Tenuipalpidae	<i>Raoiella indica</i> Hirst	<i>P. dactylifera</i>	Gassouma 2005
		<i>Tenuipalpus eriophyoides</i> Baker, 1948	<i>P. dactylifera</i>	Gassouma 2005
	Tetranychidae	<i>Eutetranychus orientalis</i> (Klein, 1936)*	<i>Chenopodium murale</i> L. (Amaranthaceae)	Present study
		<i>Oligonychus afrasiaticus</i> (McGregor, 1939)	<i>Phoenix dactylifera</i> L. (Arecaceae)	Gassouma 2005
		<i>Tetranychus urticae</i> Koch, 1836	Greenhouse vegetables (tomatoes and cucumbers)	Environment Agency Abu Dhabi 2008
	Trombiculidae	<i>Trombiculus</i> sp.	Not specified	Environment Agency Abu Dhabi 2008
	Trombidiidae	<i>Dinothrombium</i> sp.	Soil	Vine & Al Abed 1996
	Tydeidae	<i>Tydeus</i> sp.*	<i>Lantana camara</i> L. (Verbenaceae)	Present study

Kaźmierski, 1998). The voucher material, preserved as slide-mounted specimens, is deposited in the Department of Plant Protection, Faculty of Agriculture, Assiut University, Egypt.

RESULTS

New Records

Order Mesostigmata

Family Blattisociidae Garman, 1948

For a long time, acarologists agreed that *Cheiroseius* Berlese, 1916 and *Lasioseius* Berlese, 1916 belong to family Ascidae (Lindquist and Evans, 1965;

Halliday *et al.*, 1998) while recently they were transferred to Blattisociidae (Lindquist *et al.*, 2009). Lindquist and Moraza (2010) presented a revised family diagnosis with a key to world genera. In this paper, the new concept of Lindquist *et al.* (2009) for blattisociid mites was followed. This is the first report of this family from the UAE.

Cheiroseius nepalensis (Evans and Hyatt, 1960)

Material examined — Four females, Dubai, 12 Jan. 2013, 25°07' N, 55°06' E, alt. 13 m, on Bermuda grass, *Cynodon dactylon* L. (Poaceae) close to soil surface.

Remarks — Mites of the genus *Cheiroseius* are known to feed on collembolans (Collembola) (Halliday *et al.*, 1998). The present specimens of *C. nepalensis* (Evans and Hyatt, 1960) were found in association with high populations of collembolans and thrips. This is the first report of this species from the UAE.

Distribution — China (Zhang and Fan, 2010), Hungary (Salamane and Kontschán, 2005), Iran (Jalaeian *et al.*, 2004), Philippines (Raros and Raros, 1999) and Taiwan (Xiong, 1989).

***Lasioseius youcefi* Athias-Henriot, 1959**

Material examined — Twenty females and five males, Dubai, 15 Jan. 2013, 25°06' N, 55°08' E, alt. 122 m, on *C. dactylon*.

Remarks — Mites of the genus *Lasioseius* occur in various habitats such as plants, soil and leaf litter (Halliday *et al.*, 1998). The original collection of *L. youcefi* was collected from wet mosses in Algeria (Athias-Henriot, 1959). Walter and Lindquist (1989) redescribed and presented diagnoses for *L. berlesei* (Oudemans, 1938), *L. youcefi* and *L. confusus* Evans, 1958 on the basis of the spermatheca. The species *L. youcefi* belongs to the subgenus *cuspiacus* Christian and Karg, 2006, which includes species having mostly acicular dorsal setae and a smaller number of pectinate setae. This is the first report of this species from the UAE.

Distribution — Africa (Athias-Henriot, 1959), Asia (Ishikawa, 1969), Europe (Westerboer, 1963) and North America (Chant, 1963).

Family Phytoseiidae Berlese, 1916

***Cydnoseius negevi* (Swirski and Amitai, 1961)**

Material examined — Twenty five females and 10 males, Dubai, 15 Jan. 2013, 25°06' N, 55°08' E, alt. 145 m, on *C. dactylon*.

Remarks — *Cydnoseius negevi* (Swirski and Amitai, 1961) was originally described from Israel, on date palm, *Phoenix dactylifera* L. (Arecaceae) (Swirski and Amitai 1961). According to Chant and McMurtry (2007), the genus *Cydnoseius* contains two species, *C. negevi* and *C. muntius* (Schicha and

Corpuz-Raros), the latter described from Philippines, on *Shorea guiso* (Blanco) Blume (Dipterocarpaceae). This is the first report of this species from the UAE.

Distribution — *Cydnoseius negevi* has been essentially reported from the Mediterranean area, Egypt (El Badry, 1967a), Israel (Swirski and Amitai, 1961), Oman (Hountondji *et al.*, 2010), Pakistan (Muma, 1967), Saudi Arabia (Negm *et al.*, 2012b) and Sudan (El Badry, 1967b).

***Neoseiulus makuwa* (Ehara, 1972)**

Material examined — Two females, Dubai, 15 Jan. 2013, 25°06' N, 55°08' E, alt. 145 m, on *Sea-purslanes*, *Sesuvium* sp. (Aizoaceae).

Remarks — The type specimens of *Neoseiulus makuwa* were found on *Cucumis melo* var. *makuwa* at Kita-usa, Usa, Oita, Kyushu, Japan (Ehara 1972). The two collected females completely fit the original description of Ehara (1972) and the redescription given by Zannou *et al.* (2006), who reported one female in Africa (Cameroon), on *Ageratum conyzoides* L. (Asteraceae). This is the first record of this species in UAE.

Distribution — It was reported from Saudi Arabia in the Middle East (Negm *et al.* 2012a). It has also been recorded in Cameroon, China, Indonesia (Sumatra), Japan, South Korea and Taiwan (Ehara and Amano 2004; Moraes *et al.* 2004).

***Proprioseiopsis asetis* (Chant, 1959)**

Material examined — Three females, Dubai, 15 Jan. 2013, 25°06' N, 55°08' E, alt. 122 m, on *C. dactylon*.

Remarks — The original description of *Proprioseiopsis asetis* is based on material collected on apple, at Kearneysville, West Virginia, USA (Chant 1959). Muma *et al.* (1970) recorded this species from Florida. This is the first record of this species in UAE. Distribution — This species was reported from Saudi Arabia in the Middle East (Negm *et al.* 2012a). It is otherwise known from Brazil, Galapagos, Hawaii, Jamaica, Mexico, Taiwan and USA (Moraes *et al.* 2004).

Order Trombidiformes

Family Cheyletidae Leach, 1815

Hemicheyletia bakeri (Ehara, 1962)

Material examined — Five females, Dubai, 12 Jan. 2013, 25°06' N, 55°09' E, alt. 7 m, on *C. arvensis*.

Remarks — This species was described from Rose mallow, *Hibiscus rose-sinensis* (Malvaceae) in a greenhouse in Sapporo, Hokkaido, Japan (Ehara, 1962). It was found predated on citrus red mite, *Panonychus citri* (McGregor) in Ehime prefecture of Japan (Razaq *et al.*, 2001). This is the first report of the family Cheyletidae from the UAE.

Distribution — Australia (Gerson, 1994), Israel (Gerson, 1967), Pakistan (Qayyum and Chaudhri, 1979), Philippines (Corpuz-Raros, 1972) and USA (Muma, 1964).

Family Tetranychidae Donnadieu, 1875

Eutetranychus orientalis (Klein, 1936)

Material examined — Two females, Dubai, 12 Jan. 2013, 25°06' N, 55°08' E, alt. 145 m, on Nettle-leaved goosefoot, *Chenopodium murale* L. (Amaranthaceae).

Remarks — The oriental red mite, *Eutetranychus orientalis*, primarily a pest of citrus, is reported from many parts of the world. This is the first report of this species from the UAE.

Distribution — Cosmopolitan.

Four other species of the families, Anystidae Oudemans, 1936 – genus *Paratarsotomus*; Caligonellidae Grandjean, 1944 – genus *Molothrognathus*; Eupodidae Koch, 1842 – genus *Eupodes*; Tydeidae Kramer, 1877 – genus *Tydeus*, were herein first recorded from UAE. It has been difficult to determine the species names because of poor taxonomic competences and the few specimens collected for these groups. However, further collaborations with World Acarologists would be very expected to identify these mites. The material examined is as follows:

Family Anystidae - Genus *Paratarsotomus* sp.

Material examined — One female, Dubai, 12 Jan. 2013, 25°06' N, 55°09' E, alt. 7 m, on Field binweed, *Convolvulus arvensis* L. (Convolvulaceae).

Family Caligonellidae – Genus *Molothrognathus* sp.

Material examined — Two females, Dubai, 12 Jan. 2013, 25°07' N, 55°06' E, alt. 13 m, on *C. dactylon*.

Family Eupodidae - Genus *Eupodes* sp.

Material examined — One female and one nymph, Dubai, 12 Jan. 2013, 25°06' N, 55°09' E, alt. 7 m, on *C. arvensis*.

Family Tydeidae - Genus *Tydeus* sp.

Material examined — Four females, Dubai, 12 Jan. 2013, 25°06' N, 55°09' E, alt. 7 m, on Spanish flag, *Lantana camara* L. (Verbenaceae).

CONCLUSION

Thirty seven mite species (including 10 unidentified species) have been reported from UAE so far. The mite fauna of this country is still poorly known and it is expected to contain much more species that have to be discovered.

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