Linzer biol. Beitr.	47/2	1337-1352	30.12.2015

New records of *Eutrombidium sorbasiensis* MAAYORAL & BARRANCO, 2004 (Acari: Prostigmata: Microtrombidiidae: Eutrombidiinae) from Europe, with notes on some other *Eutrombidium* and their hosts

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A b s t r a c t : New records and new measurements are given for *Eutrombidium sorbasiensis* and *E. trigonum*. Specimens mentioned from Corsica, Croatia, Greece and Sardinia as *E. robauxi* belong to *E. sorbasiensis*. *E. locustarum* and *E. djordjevici* are synonymized with *E. trigonum*. *E. sorbasiensis* is new to the fauna of Balearic Islands (Ibiza), France, Italy continental and Sicily, Malta and Ukraine. *E. trigonum* is new to the fauna of Rhodes. A list of hosts for *Eutrombidium* of the world is given.

K e y w o r d s : Parasitengona, *E. sorbasiensis*, *E. trigonum*, *E. locustarum*, *E. djordjevici*, synonymization, new records, new hosts.

Introduction

The genus *Eutrombidium* VERDUN, 1909 is widespread in the world, excluding Antarctica. Till now only 38 species are known; 23 species of these were described based on larvae or larvae and adults. In Europe the following *Eutrombidium* species, based on larvae or larvae and adults, were found: *E. trigonum* (HERMANN, 1804), *E. odorheiense* FEIDER, 1938 [according to MĄKOL & WOHLTMANN (2012) nomen dubium], *E. robauxi* SOUTHCOTT, 1993, *E. sorbasiensis* MAYORAL & BARRANCO, 2004, *E. feldmanmuhsamae* FEIDER, 1977 and *E. djordjevici* SABOORI & PEŠIĆ 2006 (HERMANN 1804, FEIDER 1938, 1977, SOUTHCOTT 1993, MAYORAL & BARRANCO 2004, SABOORI & PEŠIĆ 2006). Moreover, also described are *E. debilipes* (LEONARDI, 1900) and *E. rostratum* (SCOPOLI, 1763), but both are nomen dubium (MĄKOL & WOHLTMANN 2012). *E. robauxi* was mentioned from Turkey, Croatia, Corsica, Sardinia and Greece (SOUTHCOTT 1993, HAITLINGER 2004a, 2007a, b). Specimens collected in Corsica, Croatia and Sardinia were mistakenly determinated as *E. robauxi* – all these specimens belong to *E. sorbasiensis*. *E. robauxi* is the only species known from Turkey and Corfu (Greece) (SOUTHCOTT 1993).

In this paper first records of *E. sorbasiensis* from Croatia, France, Greece continental, Crete, Rhodes, Italy continental, Malta, Sardinia, Sicily and Ukraine are recorded. Moreover, complementary metric data are presented for *E. sorbasiensis* and *E. trigonum*. *E. locustarum* (WALSH, 1866) and *E. djordjevici* SABOORI & PEŠIĆ, 2006 are synonymized with *E. trigonum*, as well as a list of their hosts worldwilde is provided.

Material and methods

All examined specimens of *Eutrombidium sorbasiensis* were obtained from Orthoptera kept in herbaceous plants in Balearic Islands, Crete, France, continental Italy, Malta, Sardinia, Sicily and Ukraine. Mites were preserved in 70% ethanol. Later they were mounted on microscopic slides using Berlese medium. Measurements (given in micrometers) were made using microscope NIKON Eclipse 50i. Other measured specimens of *E. sorbasiensis* and *E. trigonum* were mentioned by HAITLINGER (2004b, 2006a, 2007b). The terminology and abbreviations follow SOUTHCOTT (1993) and WOHLTMANN et al. (2007). The mites are deposited in Museum of Natural History of the Faculty of Biology and Animal Science, Wrocław University of Environmental and Life Sciences.

Family M i c r o t r o m b i d i i d a e THOR, 1935

Subfamily E u t r o m i d i i n a e THOR, 1935

Genus *Eutrombidium* VERDUN, 1909

***Eutrombidium sorbasiensis* MAYORAL & BARRANCO, 2004**

E. robauxi (HAITLINGER, 2004, 2006)
E. sorbasiensis (HAITLINGER 2007, AZIMII et al. 2011)

M a t e r i a l e x a m i n e d : Malta, Golden Bay, 3 July 2000, 11 larvae, all from *Sphingonotus* sp. (Orthoptera: Acrididae); Greece (continental), Agi Apostoli, 7 September 1981, 5 larvae, from undetermined Acrididae, Olimpia (Peloponez), 3 September 1981, 1 larva from undetermined Cerambycidae, 7 km to south from Geraki (Peloponez), 9 July 2004, 1 larva, from undetermined Orthoptera, Crete, Koutouloufari, 9 September1997, 1 larva; Piscopiano, 17 September 1997, 11 larvae, all from undetermined Acrididae (Orthoptera); Rhodes, Gennadi, 24 May 2001, 9 larvae, Lindos, 25 May 2001, 4 larvae, all from undetermined Acrididae; Ibiza (Balearic Islands), San Antoni, 4 September 2000, 1 larva from undetermined Orthoptera, Italy (continental), Sella di Corno, 1 larva, 25 July 2005 from undetermined Acrididae, Sicily, 5 km east of Prizzi, 6 July 2013, 1 larva from undetermined Orthoptera, France, Castelle n. Ap, 29 June 2003, 1 larva, Baffian n. Oxgelat n. Saint Claude, 19 July 2003, 2 larvae, both from undetermined Orthoptera; Ukraine, Crimea, vicinity of Yalta, 23 July 2004, 2 larvae from undetermined Acrididae; coll. R. Haitlinger. First record from Crete, France, Greece continental, Ibiza, Italy (continental), Malta, Rhodes, Sicily and Ukraine.

Till now, this species was known only from Iran, Portugal and Spain (MAYORAL & BARRANCO 2004, HAITLINGER 2006b, AZIMI et al., 2011). Renewed examination specimens from Croatia, Corsica, Greece and Sardinia indicated that these specimens belong to *E. sorbasiensis*. Earlier they were determinate as *E. robauxi*. Among specimens collected in different regions of Europe and Iran were found not great differences in metrical data (Table 1).

D i s t r i b u t i o n : Croatia, France (continental), Corsica, Greece (continental), Crete, Rhodes, Ibiza (Balearic Islands), Iran, Italy (continental), Sardinia, Sicily, Portugal, Spain (continental), Ukraine.

E. trigonum (HERMANN, 1804)

Material examined: Italy (continental), Lago Matesse n. Latino, 23 July 2005, 1 larva from undetermined Orthoptera, Rhodes, Gennadi, 26 May 2001, 4 larvae, Lindos, 26 May 2004, 2 larvae, all from undetermined Acrididae; coll. R. Haitlinger. First record from Rhodes. This species is known from almost whole Europe and Turkey, excluding Iberian Peninsula and east part of Europe (OUDEMANS 1912, SOUTHCOTT 1993, ROBAUX 1974, WOHLTMANN et al. 1996, HAITLINGER 2004a, b, 2006, 2007a, b, c, MĄKOL & WOHLTMANN 2012, SEVSAY & KARAKURT, 2013). PAOLI (1937) mentioned from Italy *E. locustarum* (WALSH, 1866) later recognized as *E. trigonum*, also ADIL & SEVSAY (2013) mentioned this species from Turkey and measurements for all stage were given. Measurements and meristic data for larvae not differs from *E. trigonum*. According to SOUTHCOTT (1993) and HUSBAND & WOHLTMANN (2011) *E. locustarum* occurs in Canada, Mexico and USA. Recently three species: *E. walshi* SOUTHCOTT, 1992, *E. centrale* SOUTHCOTT, 1993 and *E. occidentale* SOUTHCOTT, 1993 were synonymized.with *E. locustarum* (HUSBAND & WOHLTMANN, 2011). At the same time recognized *E. locustarum* as good species. In reality between *E. locustarum* and *E. tigonum* lack metrical and meristic differences (Table 2). Also leg chaetotaxy is identical. Nevertheless, HUSBAND & WOHLTMANN (2011) uphold a decision about separateness of both species. As reason geographical isolation of both species is given; however, many mites species occur at the same time in Europe and North America: Some species have wide geographical range: for example *Abrolophus aitapensis* (SOUTHCOTT, 1948) described from New Guinea was found also in Macao, Vietnam, Madagascar and Guadeloupe (SOUTHCOTT 1948, HAITLINGER 1987a, b, 2006c, 2011). *E. locustarum* is doubtlessly a synonym of *E. trigonum*. In France six species of *Eutroimbidium* were found; among these five species were described based on adults: *E. cadurcense* ANDRE, 1931, *E. canigulense* ANDRE, 1931, *E. distinguendum* ANDRE, 1931, *E. frigidum* BERLESE, 1910, and *E. vandeli* ANDRE, 1931. Measurements given by ROBAUX (1974) for *E. trigonum* from France distinctly differ according to measurements and number of normal setae on tarsus I of other European specimens (Table 2). May be it is a larva belonging to one of above mentioned species. *E. djordjevici* is very similar to *E. trigonum*. According to SABOORI & PEŠIĆ (2006) it differs from *E. trigonum* in Ti I (6 normal setae vs. 5 normal setae) and Ti II (5 normal setae vs. 4 normal setae) but it is bad information. *E. trigonum* has also Ti I with 6 setae and Ti II with 5 setae. In remarks of *E. djordjevici* are mentioned 7 features differing both species: PLN, LPS, LN, PL, SL, HS/PLN and LSS/SS, however *E. djordjevici* has only Pl and SL slightly shorter (Table 2). Index HS/PLN (1.94-4.26 vs.3.42-6.5), LSS/SS (2.53-3.62 vs. 2.62-3.27) is in range of variability. Other metrical data in both species are identical. Therefore, *E. djordjevici* is a synonym of *E. trigonum*.

Hosts of *Eutrombidium* species

The genus *Eutrombidium* is widely distributed in all continents, excluding Antarctica, but only 23 species, based on larva or larva and adults, are known hitherto. The species of *Eutrombidium* are associated mainly with hosts of Orthoptera; the only *E. fortunatae* HAITLINGER, 2005 was collected exclusively on Apidae and *E. sigirijanum* HAITLINGER, 2006 on Tenebrionidae (HAITLINGER 2005, 2006b). It is unknown if these hosts are main hosts for the species. However, some species of *Eutrombidium* were notted on untypical hosts: *E. feldnanmuhsamae* and *E. robauxi* on Mantodea (SOUTHCOTT 1993) and *E. sorbasiensis* on Cerambycidae.The order Orthoptera includes 40 families with 23.855 species (INGRISH 2011). *Eutrombidium* species were reported from only 6 families of Orthoptera: Acrididae, Gryllidae, Morabidae, Pyrgomorphidae, Tetrigidae and Tettigonidae. *Eutrombidium* species were found on host species determined to species or only to genus:185 host belong to Acrididae, five to Morabidae, four to Gryllidae, four to Tettogonidae, two to Pyrgomorphidae and one species to Tetrigidae. Only for two *Eutrombium* hosts are well known: *E. australense* was found on 129 hosts (122 Acrididae) and *E. trigonum* on 49 hosts. Acrididae species are main hosts for *Eutrombidium* species; 13 species of them were noted on Acrididae, five species on Gryllidae, one species on Morabidae, Pyrgomorphidae, Tetrigidae and Tettigonidae.

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Table 1. Metric data of *Eutrombidium sorbasiensis* larvae collected from Spain (MAYORAL & BARRANCO 2004 (I), Iran (AZIMI et al' 2011 (II), Malta (III), Croatia, (IV), Italy (continental), Corsica, Sardinia, Sicily, Ibiza (Balearic Islands), France, Ukraine (V), Greece (continental), Crete, Rhodes (VI), range (VII).

	In=12	IIn=8	IIIn=7	IVn=16	V=21	VIn=7	VII
IL	258-313	268-792	805-1618	502-887	237-1476	221-1316	237-1618
IW	150-180	166-420	408-875	329-506	133-740	135-714	133-875
AW	80-103	87-99	84-101	84-91	83-92	80-95	80-103
PW	88-105	97-104	88-105	88-96	88-93	85-103	88-105
L	113-138	106-132	93-115	93-106	99-113	100-127	93-138
W	98-123	104-123	98-127	98-112	100-109	99-128	98-128
AL.	28-35	30-37	22-31	23-36	26-36	28-36	22-37
PL	20-29	25-35	18-26	22-25	22-25	21-27	18-35
ISD			63-73	63-77	61-77	65-81	61-81
AP	33-40	40-42	32-40	32-38	33-38	34-42	32-42
AM	15-35	25-37	20-35	21-33	20-36	20-40	15-40
S	73-80	70-87	49-78	68-77	55-86	69-88	49-88
MA	50-65	52-67	47-55	48-58	47-58	50-62	47-67
AA	50-65	57-62	49-62	58-65	51-68	48-83	50-83
SB	60-80	74-77	62-79	70-79	60-76	62-92	60-92
GL			74-82	75-82	71-82	74-85	71085
DS	35-53	30-52	20-52	20-50	26-48	23-62	20-62
SA	18-23	22-27	18-22	18-24	19-24	20-25	18—27
SP	20-25	17-27	20-24	20-23	19-23	20-23	17-27
OD			9-12	9-12	10-14	10-12	9-14
1a			15-21	18-23	15-24	18-23	15-24
3a			26-29	26-33	24-33	26-37	24-37
1b			7-9	8-9	7-9	8-9	7-9
2b			7-8	7-8	7-8	7-9	7-9
3b			7-9	7-8	7-8	8-9	7-9
h2(MPS)	60-85	74-92	54-80	56-77	62-77	75-102	54-93
h1(LPS)	85-100	94-114	76-101	72-92	80-109	68-108	72-114
HS	55-75	54-67	55-70	55-63	60-67	59-70	54-75
LSS	105-115	87-106	84-106	84-99	90-99	86-109	84-115
SS	28-40	30-47	33-41	31-35	32-36	32-38	28-47
SL	28-35	32-49	30-38	31-37	30-37	33-38	28-49

	In=12	IIn=8	IIIn=7	IVn=16	V=21	VIn=7	VII
PLN	13-20	13-22	14-21	14-21	19-21	14-21	13-22
TaI	73-83	82-89	64-82	64-79	70-79	72-88	64-89
TiI	33-43	37-47	31-40	31-39	32-39	37-45	31-47
GeI	23-30	25-30	22-27	23-28	23-30	22-30	22-30
FeI	43-58	52-60	44-55	44-52	45-52	46-60	43-60
TrI	25-33	30-37	27-31	27-33	26-40	25-36	25-40
CxI	55-65	55-62	56-63	49-65	53-61	48-64	49-65
TaII	53-73	60-74	56-71	56-69	57-69	61-74	53-74
TiII	30-35	32-47	25-34	26-36	27-36	28-39	25-47
GeII	18-20	18-32	15-21	15-21	14-25	18-24	14-32
FeII	43-50	50-57	40-49	40-50	41-50	44-54	40-57
TrII	28-33	30-35	25-32	24-31	27-35	24-35	24-35
CxII	55-68	50-69	58-72	54-65	52-65	51-67	50-72
TaIII	45-68	50-62	44-56	46-56	49-59	46-61	44-68
TiIII	23-38	32-42	29-37	30-37	32-37	32-42	23-42
GeIII	13-20	20-25	17-21	17-30	20-30	18-29	13-30
FeIII	38-53	50-60	46-56	46-52	46-52	48-56	38-60
TrIII	30-40	33-56	30-40	29-45	30-45	33-40	29-56
CxIII	60-70	57-74	54-67	54-60	54-61	55-66	54-74
LegI	247-304	294-312	245-294	252-286	255-286	253-317	245-317
LegII	229-277	242-300	220-276	229-270	226-267	227-289	220-300
LegIII	212-277	251-297	224-272	234-281	232-270	228-283	212-297
IP	688-847	787-908	689-836	715-851	717-821	715-872	688-908

Table 2. Metric data of *Eutrombidium trigonum* from: I – Poland, II – Rhodes, III Croatia, Bulgaria, Romania, IV France, Italy (continental), V Range, VI –*E. djordjevici*, VII – *E. locustarum* – Mexico = *E. occidentale*, *E. centrale*, VIII – ? *E. trigonum* England, France (OUDEMANS, 1912, ROBAUX, 1974, SOUTHCOTT, 1993)

	In=15	IIn=7	IIIn=7	IVn=2	V	VI	VII	VII
IL	736-1955	278-733	380-2163	887-2026	278-2163	225-2003		
IW	406-1180	150-417	248-1075	594-1092	150-1180	151-940		
AW	96-114	94-112	106-114	97-115	94-114	99-107	86-110	103-132
PW	112-128	99-119	108-124	113-126	99-128	101-121	92-117	116-144
AL	40-48	40-46	44-49	41-49	40-49	33-47	36-58	40-65
PL	26-34	25-35	26-35	28-32	25-35	15-25	23-33	26-40
AM	38-46	35-51	26-49	27-40	26-51	35-48	30-57	32-62
L	124-136	124-138	127-136	120-142	120-1420	119-141	98-126	130-168
W	120-136	118-140	133-140	125-143	118-140	116-136	110-134	127-142
ISD	71-95	77-92	82-89	67-85	71-92			
AP	44-50	36-46	41-48	42-47	36-50	35-47		43-58
MA	44-54	53-63	55-61	46-57	44-63-	52-62		52-62
AA	72-81	60-83	73-83	66-82	60-83		63-87	86-92
SB	81-92	76-96	81-98	83-96	76-98	72-89	68-102	87-104
LN	20-24	22-30	23-29	20-29	20-30	21-29		29-40
S	72-84	75-88	75-84	63-80	72-88	77-82	68-102	48-80
GL	82-88	78-99	82-98	74-91	78-99			
DS	28-48	26-62	24-57	26-60	24-62	19-50		26-73
SA	30-34	23-33	27-33	29-35	23-34	25-37		27-36

	In=15	IIn=7	IIIn=7	IVn=2	V	VI	VII	VII
SP	18-24	19-23	21-23	19-21	18-24	20-25		20-24
HS	64-72	66-78	66-75	62-79	62-78	62-74	54-72	64-84
LSS	124-140	101-135	123-142	124-143	101-142	106-134	107-133	112-150
SS	38-62	35-49	43-52	38-53	35-62	32-45	36-50	40-55
SL	34-42	38-40	33-38	36-39	33-42	27-33	28-43	29-55
PLN	14-18	12-21	12-22	13-16	12-22	15-32		13-18
H1(LPS)	68-78	78-112	76-88	70-89	68-112	87-99		59-79
H2(MPS)	67-72	67-81	68-84	68-82	67-84	82-92		
TaI	66-74	72-88	72-80	69-74	66-88	72-92	67-77	78
TiI	34-38	40-45	37-47	35-43	34-47	39-42	31-45	48
GeI	24-28	25-30	24-28	23-27	23-30	25-35	21-28	30
FeI	44-52	49-55	48-53	47-52	44-55	45-59	42-59	49-55
TrI	26-34	31-37	29-36	31-38	26-37	30-32	29-32	
CxI	52-62	55-64	64-69	57-67	52-69	57-62	54-59	
TaII	56-64	64-73	64-72	61-70	56-73	67-82	59-68	58-73
TiII	30-32	34-37	33-41	311-38	30-41	30-42	27-36	38
GeII	16-20	20-23	18-24	17-21	16-24	20-24	12-22	23
FeII	44-50	44-51	45-51	43-51	43-51	47-59	38-55	49-50
TrII	24-32	31-34	29-37	27-32	24-37	27-37	25-32	
CxII	52-66	56-68	54-76	59-67	52-76	54-67	47-54	
TaIII	42-50	47-59	48-59	50-56	42-59	49-62	42-59	44-61
TiIII	32-38	33-42	35-41	35-40	32-42	33-52	31-40	40-44

	In=15	IIn=7	IIIn=7	IVn=2	V	VI	VII	VII
GeIII	15-18	18-26	19-23	17-22	15-26	20-22	15-21	16-22
FeIII	48-52	46-59	52-56	49-54	46-59	52-62	39-54	47-54
TrIII	26-36	36-47	34-41	31-36	26-47	37-42	31-37	
CxIII	48-58	56-65	58-71	54-65	48-71	52-62	45-51	
LegI		288-317	286-302	272-292	247-317	278-307		235
LegII		263-279	261-297	247-264	247-297	254-307		210
LegIII		243-291	252-289	248-267	243-291	242-288		195
IP		795-872	804-888	767-807	767-888	784-902		640
OD	11-13	9-14	10-14	8-13	8-14		10-11	
1a	15-25	21-29	19-34	15-27	19-34			
3a	30-35	34-42	32-39	26-38	32-42			
1b	10-11	8-10	10-13	10-12	8-13			
2b	9-10	8-10	10-14	10-12	8-14			
3b	8-10	8-9	10-13	9-11	8-13			

Table 3. Distribution and hosts of all known larval species of *Eutrombidium*

Mite species	Hosts	Distribution	References
E. aegyptium KARIMI IRAVANLOU, KAMALI & TALEBI, 2000	*Anacridium aegyptium* (LINNAEUS), *Ochridia gracilis* Krauss, *Oedipoda coerulescens* LINNAEUS (Acrididae)	Iran	KARIMI IRAVANLOU et al. (2000)
E. africanum SOUTHCOTT, 1993	*Anacridium melamorhodon* (WALKER), *Catantops axillaries* (THUNBERG) (Acrididae)	Niger	SOUTHCOTT (1993)
E. australiense SOUTHCOTT, 1993	*Bundinja* sp., *Callimungia isa* (REHN), *Moraba darwinensis* KEY, *Moraba* sp., *Waramunga* sp. (Morabidae), *Greyacris picta* (SJÖSTEDT), *Monistra pustulifera* (WALKER) (Pyrgomorphidae), *Ablectia rufescens* SJÖSTEDT, *Acrida conica* (FABRICIUS), *Adloppa erythroptera* SJÖSTEDT, *Aiolopus thalassinus* (FABRICIUS), *Apotropis tricarinata* (STÅL), *A. vittata* (TEPPER), *Aretza* sp., *Austracris basalis* (WALKER), *A. guttulosa* (WALKER), *Austracris* sp., *Austroicetes arida* KEY, *A. cruciara* (SAUSSURE), *A. frater* (BRANCSIK), *A. interioris* WHITE & KEY, *A. mullarborensis* KEY, *A. pusolla* (WALKER), *A. tenuicornis* KEY, *A. tricolor* (SJÖSTEDT), *A. vulgaris* (SJÖSTEDT), *Azelota* sp., *Beplessia dispar* (TEPPER), *Beplessia* sp., *Bermius brachycerus* STÅL, *Brachyexarna lobipennis* SJÖSTEDT, *Buforania rufa* SJÖSTEDT, *Caledia captiva* (FABRICIUS), *Caloptilla australis* SJÖSTEDT, *C. lutescens* (WALKER), *Caperrala* sp., *Capraxa cinamomaea* SJÖSTEDT, *Capraxa* sp., *Cedarinia corallipes* SJÖSTEDT, *C. limbatella* (STÅL), *Cedarinia* sp., *Cirphula carbonaria* (SERVILLE), *Chortoicetes terminifera* (WALKER), *Clepsydria variegata* (SJÖSTEDT), *Collitera variegata* SJÖSTEDTt, *Collitera* sp., *Coryphistes interioris* TEPPER, *C. ruricola* (BURMEISTER), *Cryptobothris chrysophorus* REHN, *Cuprascula* sp.,	Australia	SOUTHCOTT (1993), KEY (1994)

Mite species	Hosts	Distribution	References
	Curpilladia flavocarinata SJÖSTEDT, *Curpilladia* sp., *Desertaria fasciata* SJÖSTEDT, *Desertaria* sp., *Ecphantus quadrilobus* STÅL, *Euophistes almadenensis* SJÖSTEDT, *Euophistes* sp., *Exarna includens* (WALKER), *Fipurga crassa* SJÖSTEDT, *Froggattina australis* (WALKER), *Gastrimargus musicus* (FABRICIUS), *Goniaea australasiae* (LEACH), *G. furcifera* (WALKER), *G. opomaloides* (WALKER), *G. vocans* (FABRICIUS), *Goniaea* sp., *Goniaeoidea* sp., *Happerana* sp., *Hepalicus gracilis* SJÖSTEDT, *Heteropternis obscurella* (BLANCHARD), *Lagoonia scabronotum* SJÖSTEDT, *Lagoonia* sp., *Locusta migratoria* (LINNAEUS), *Maclystria* sp., *Macrazelota cervin*a (WALKER), *Macrazelot*a sp., *Macrocara congolobata* (WALKER), *Macrocara* sp., *Macrolobalia ocellat*a (TEPPER), *M. striata* (SJÖSTEDT), *Macrotona australis* (WALKER) *M. curvicostalis* (SJÖSTEDT), *M. lineosa* (WALKER), *M. mjobergi* (SJÖSTEDT), *M. picta* (SJÖSTEDT), *M. securiformis* (SJÖSTEDT), *Macrotona* sp., *Micreoila badia* (SJÖSTEDT), *Micreola* sp., *Minyacris occidentalis* KEY, *Oedaleus australis* (SAUSSURE), *Pardillana* sp., *Peakesia brunnea* (WHITE), *P. coeruleipes* SJÖSTEDT, *P. hospital* (BOLIVAR), *P. nana* SJÖSTEDTt, *P. parvipennis* SJÖSTEDT, *P. rubescens* SJÖSTEDTT, *P. striata* (TEPPER), *P. straminea* SJÖSTEDTt, *P. vitripennis* SJÖSTEDT, *Peakesia* sp., *Perbellia brevialata* SJÖSTEDT, *P. picta* SJÖSTEDT, *Perelytrana rana* SJÖSTEDTt, *Perelytrana* sp., *Perunga ochracea* SJÖSTEDT, *Pespulia* sp., *Phalacridium vittatum* (SJÖSTEDT), *Pseudaiolopus keyi* (HOLLIS), *Pycnosticnus seriatus* (SAUSSURE), *Rapsilla fusca* SJÖSTEDT, *Rusulpia tristi*s SJÖSTEDT, *Schizobothrus flavovittatus* SJÖSTEDT, *Stenocatantops angustifons* (WALKER), *Stropis nigrovitellina* SJÖSTEDT,		

Mite species	Hosts	Distribution	References
	Stropis sp., *Sumbilvia* sp., *Terpillaria pulchra* SJÖSTEDT, *Urnisa guttulosa* (WALKER), *Valanga meleager* (SJÖSTEDT), *Valanga* sp., *Xanterriaria mediocris* (SJÖSTEDT), *Yrrhopta cervina* (SJÖSTEDT), *Y. striata* SJÖSTEDT, *Yrrhopta* sp., *Zabrala ceropes* SJÖSTEDT, *Zabrala* sp., *Zebratula flavonigra* SJÖSTEDT, *Zebratula* sp. (Acrididae)		
E. carazoense HAITLINGER, 2005	Gryllidae undet. (Orthoptera)	Nicaragua	HAITLINGER (2005)
E. elburzensis KARIMI IRAVANLOU, KAMALI & TALEBI, 2000	*Calliptamus barbarus* (COSTA), *Locusta migratoria* LINNAEUS, *Sphinognotus rubescens* (WALKER) (Acrididae)	Iran	KARIMI IRAVANLOU et al. (2000)
E. fathipouri KARIMI IRAVANLOU, KAMALI & TALEBI, 2000	*Pyrgodera armata* FABRICIUS (Acrididae)	Iran	KARIMI IRAVANLOU et al. (2000)
E. feldmanmuhsamae FEIDER, 1977	*Acrotylus* sp., *Calliptamus* sp., *Dociostaurus curvicercus* UVAROV, *Oedipoda miniata* (PALLAS) (Acrididae), *Rivetina baetica* (RAMBUR) (Mantodea)	Cyprus, Israel	FEIDER (1977), SOUTHCOTT (1993), HAITLINGER (1993)
E. fortunatae HAITLINGER, 2005	Apidae undet. (Hymenoptera)	Argentina	HAITLINGER (2005)
E. indicum SOUTHCOTT, 1993	Host unknown	India	SOUTHCOTT (1993)
E. laosanum HAITLINGER, 2006	Gryllidae undet.	Indonesia (Lingga Islands), Laos	HAITLINGER (2006)
E. macfarlanei SOUTHCOTT, 1993	*Hieroglyphus daganensis* KRAUSS (Acrididae), Orthoptera undet.	Niger, Tanzania	SOUTHCOTT(1993), HAITLINGER (2003)
E. mbuensis HAITLINGER, 2003	Gryllidae undet.	Tanzania	HAITLINGER (2003)

Mite species	Hosts	Distribution	References
E. mossadeghi SABOORI & NEMATI, 2001	*Gryllus domesticus*, *G. desertus* PALLAS (Gryllidae)	Iran	SABOORI et al. (2001)
E. orientale SOUTHCOTT, 1993	*Encotolophus sordidus* (BURMEISTER), *Melanoplus borealis* (FIEBER) *Melanophus* sp. (Acrididae)	Canada, USA (Michigan, Nebraska)	SOUTHCOTT (1993)
E. pelebinum HAITLINGER, 2006	Orthoptera undet.	Benin	HAITLINGER, 2006
E. robauxi SOUTHCOTT, 1993	*Oedaleus decorus* (GERMAR) (Acrididae), *Geomantis larvoides* PANTEL (Mantodea)	Greece (Corfu), Turkey	SOUTHCOTT (1993)
E. sepasgosariani SABOORI, NEMATI & MOSSADEGH, 2000	*Gryllus domesticus* LINNAEUS (Gryllidae)	Iran	SABOORI et al; (2000)
E. sigirijanum HAITLINGER, 2006	Tenebrionidae undet. (Coleoptera)	Sri Lanka	HAITLINGER (2006)
E. sorbasiensis MAYORAL & BARRANCO, 2004	*Calliptamus italicus* (LINNAEUS), *O. coerulescens*, *O. decorus* (GERMAR), *Sphinognotus* sp., (Acrididae), Cerambycidae undet. (Coleoptera)	Croatia, France (Corsica), Greece (continental, Crete), Iran, Italy (continental, Sardinia, Sicily), Malta, Spain (continental, Ibiza), Ukraine	MAYORAL & BARRANCO (2004) HAITLINGER (2004), AZIMI et al. (2011.)
E. tehranicus KARIMI IRAVANLOU, KAMALI & TALEBI, 2000	*Aiolopus thalasinus* FIEBER, *Truxalis robusta* UVAROV (Acrididae)	Iran	KARIMI IRAVANLOU et al. (2000)
E. trigonum (HERMANN, 1804)	*Arphia conspersa* SCUDDER, *A. xanthoptera* (BURMEISTER) *Brachystola magna* (GIRARD), *C. barbarus* (COSTA), *C. italicus*, *Camplyacantha olivacea* (SCUDDER), *Chorthippus apricarius* (LINNAEUS), C. *biguttulus* (LINNAEUS), *C. brunneus* (THUNBERG), *C.*	Bosnia and Herzegovina, Bulgaria, Canada (Ontario), Croatia, Czech Republic, France,	OUDEMANS (1912), JUDD (1953), SOUTHCOTT (1993), HAITLINGER (2004a, b, 2006, 2007a, b, c),

Mite species	Hosts	Distribution	References
	longicornis (LATREILLE), *C. mollis* (CHARPENTIER), *C. pullus* (PHILIPPI), *C. paralellus* (ZETTERSTEDT), *Chorthippus* sp., *Chortophaga viridifasciata* (DE GEER), *Decticus albifrons*, *Dicromorpha viridis* (SCUDDER) *Dissosteira carolina* (LINNAEUS), *Encoptolophus sordidus* (BURMEISTER), *Gomphocerus rufus* (LINNAEUS), *Hadrotettix trifasciatus* (SAY), *Hesperotettix viridis* SCUDDER, *Hippicus rugosus* (SCUDDER), *Locusta viridissina* (LINNAEUS), *Melanophus bivitatus* (SAY), *M. confusus* SCUDDER, *M. differentialis* (THOMAS), *M. femurrubrum* (DE GEER), *M. gladstoni* SCUDDER, *M. mexicanus* SAUSSURE, *M. regalis* (CODGE), *M. sanguinipes* (FABRICIUS), *Melanophus* sp, *Oedipoda caerulescens*, *Oedipoda* sp., *Omocestus viridulus* (INNAEUS), *Orphulella pelidus* (BURMEISTER), *O. speciosa* (SCUDDER), *Paratylotropidia brunneri* SCUDDER, *Phoetaliotes neobruscensis* (THOMAS), *Schistocerca* sp., *Syrbula admirabilis* (UHLLER), *Xanthippus corallipes* (HALDEMAN) (Acrididae), *Tetrix subulata* (LINNAEUS) (Tetrigidae), *Conocephalus fasciatus* (DE GEER), *C. strictus* (SCUDDER), *Orchelimum vulgare* (HARRIS), *Tettigonia* sp. (Tettigonidae), *Nemobius fasciatus* (DE GEER), *Gryllus* sp. (Gryllidae), Orthoptera undet.	Germany, Great Britain, Greece (Rhodes), Holland, Italy, Mexico, Montenegro, Norway, Poland, Romania, Serbia, Switzerland, Turkey, USA (Minnesota, Missouri, Ohio, Oregon, Wyoming	SABOORI & PEŠIĆ (2006), WOHLTMANN et al. (1996), HUSBAND & WOHLTMANN (2011), MĄKOL & WOHLTMANN (2012), ADIL & SEVSAY (2013), SEVSAY & KARAKURT (20913)
E. verdense SOUTHCOTT, 1993	*Oedaleus segalensis* (KRAUSS) (Acrididae)	Canary Islands Tenerife), Republic of Cape Verde	SOUTHCOTT (1993), HAITLINGER (1997)