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Research Article

Reports of larval species of Parasitengona (Trombidiformes: Prostigmata) from Türkiye with new records

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Abstract: During a faunistic survey on mites in Kastamonu and Sinop provinces near Black Sea of Türkiye during the years 2013–2017, some larval specimens of parasitengone mites were collected from soil and light traps and identified as *Erythraeus* (*E.*) *ankaraicus* Saboori, Çobanoğlu and Bayram 2004, *Allothrombium clavatum* Saboori, Pešić and Hakimitabar, 2010, *Abrolophus kazimierae* (Haitlinger, 1986), *Abrolophus poljankus* Haitlinger and Šundić, 2021, *Allothrombium meridionale* Berlese, 1910, *Empitrombium makolae* Sevsay and Karakurt, 2013, *Leptus* (*Leptus*) *slivovi* Beron, 1975 and *Calyptostoma velutinum* (Müller, 1776). In this study, *Leptus* (*Leptus*) *slivovi* Beron, 1975, *Abrolophus poljankus* Haitlinger and Šundić, 2021 and *Abrolophus balkanicus* Haitlinger and Šundić, 2015 are new records to the mite fauna of Türkiye. Also, the identification key to known species of *Abrolophus* of the world without a comb-like seta on the palpal tarsus is updated.

Keywords: taxonomy, Trombidiformes, Türkiye, *Abrolophus*, *Leptus* (*Leptus*) *slivovi*, first reports, distribution

Introduction

The cohort Parasitengona (Acari: Trombidiformes) comprises nine superfamilies of terrestrial mites (Trombidioidea, Tanaupodoidea, Chyzerioidea, Calyptostomatoidea, Erythraeoidea, Trombiculoidea, Allotanaupodoidea, Yurebilloidea, and Amphotrombioidea) and eight superfamilies of aquatic mites. About 60 families and almost 10000 named species (Zhang *et al*., 2011). Most terrestrial parasitengone mites are ectoparasites in their larval stage, whereas their post–larval stages are predators and feed on various foods (Proctor, 2003; Walter and Krantz, 2009).

Knowledge of the Parasitengona of Türkiye is fragmentary. Erythraeoidea comprises 69 genera, but only nine genera and 25 species are reported from Türkiye (Sevsay, 2017). The Trombidiidae includes 23 genera and 206 species in the world (Mąkol and Wohltmann, 2012, 2013) and four genera (*Trombidium*, *Allothrombium*, *Dolichothrombium*, and

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Empitrombium) and 45 species are reported from Türkiye (Erman *et al.*, 2007; Mąkol and Sevsay, 2011, 2014; Sevsay *et al*., 2016 Sevsay, 2017; Sevsay *et al*., 2017). In this paper, we report on some parasitengone mite species from some regions of Türkiye. Among them, *Leptus* (*Leptus*) *slivovi* Beron, 1975, *Abrolophus poljankus* Haitlinger and Šundić, 2021 and *Abrolophus balkanicus* Haitlinger and Šundić, 2015 are reported for the first time from Türkiye.

Materials and Methods

The mites were collected into zip-lock bags for further examination in the laboratory. Garlic samples were collected by C. Cilbircioğlu, at monthly intervals from garlic growing areas during 2014–2016. Mites were extracted from the plant material by Berlese funnels, then were subsequently preserved in 70% ethanol, cleared in lactophenol solution, and mounted in Hoyer's medium (Walter and Krantz, 2009).

Some samples were collected from Sarıkum Nature Reserve Area at sea level, 21 km west of Sinop city center, between May–October 2013 and May–November 2017. Samples were collected by visiting the study area every 10–15 days by F. Turgut (41° 31' 14.78" N, 34° 11' 54.02" E). Mites were collected from CDC miniature light trap with a 6 V halogen bulb and a 18 W, 12 V black fluorescent light trap (Tilki and Dik, 2003; Turgut, 2011). Light traps were placed around the lake before sunset.

The collected samples were stored in bottles containing 70% ethanol. The samples from Sarı Kum were collected by F. Turgut (41° 31' 14.78" N, 34° 11' 54.02" E). All the mite measurements were taken using a Leica ICC50 HD soft imaging system and a BX51 Olympus microscope with a magnification changer. The terminology and abbreviations follow Wohltmann *et al*. (2006) and Saboori *et al*. (2009). The mites are deposited in the Acarological collection, Ankara University, Faculty of Agriculture, Department of Plant Protection, Türkiye.

Results

Superfamily Erythraeoidea
Family Erythraeidae
Subfamily Leptinae

***slivovi* species group (Saboori *et al*., 2020)**
***Leptus* (*Leptus*) *slivovi* Beron, 1975**

Diagnosis. Palpal femur and palpal genu each with one seta; eight setae between coxae II and III; W 103–121; SD 96–137; Ti I 149–200; Ti III 187–233; sensilla barbed through the length; with large microseta on Ti I, scutum with pointed angles; ASBM 9–15 (Figs. 1 and 2).

Distribution. Bulgaria, Italy, Liechtenstein, Norway, Poland, and Türkiye (with this new record) (Beron, 1975; Haitlinger, 1987, 2007a, b, c; Southcott, 1992).

Material examined
One larva, collected on 31 May 2017 at a light trap (off-host), Sarıkum–Sinop. Fauna of Sinop Sarıkum Nature Reserve.

Remarks
Leptus (*Leptus*) *slivovi* is a widespread species and is a new record for the fauna of Türkiye. Metric data of specimens collected from Italy and Liechtenstein were not provided by Haitlinger (2007 a, c) but were provided by Beron (1975), Haitlinger (1987), and Southcott (1992). There are two hypostomalae (*as* and *bs*) in the Türkiye specimen (Fig. 1B), which were not noted in other descriptions, probably due to its minute size. *Leptus* (*L*.) *slivovi* from Türkiye is similar to specimens collected from Bulgaria and Poland in having a large microseta ( ) on Ti I and similar values for the Ti I/AW, Ti III/AW, and AL/AAS (Table 1) (Fig. 1A).

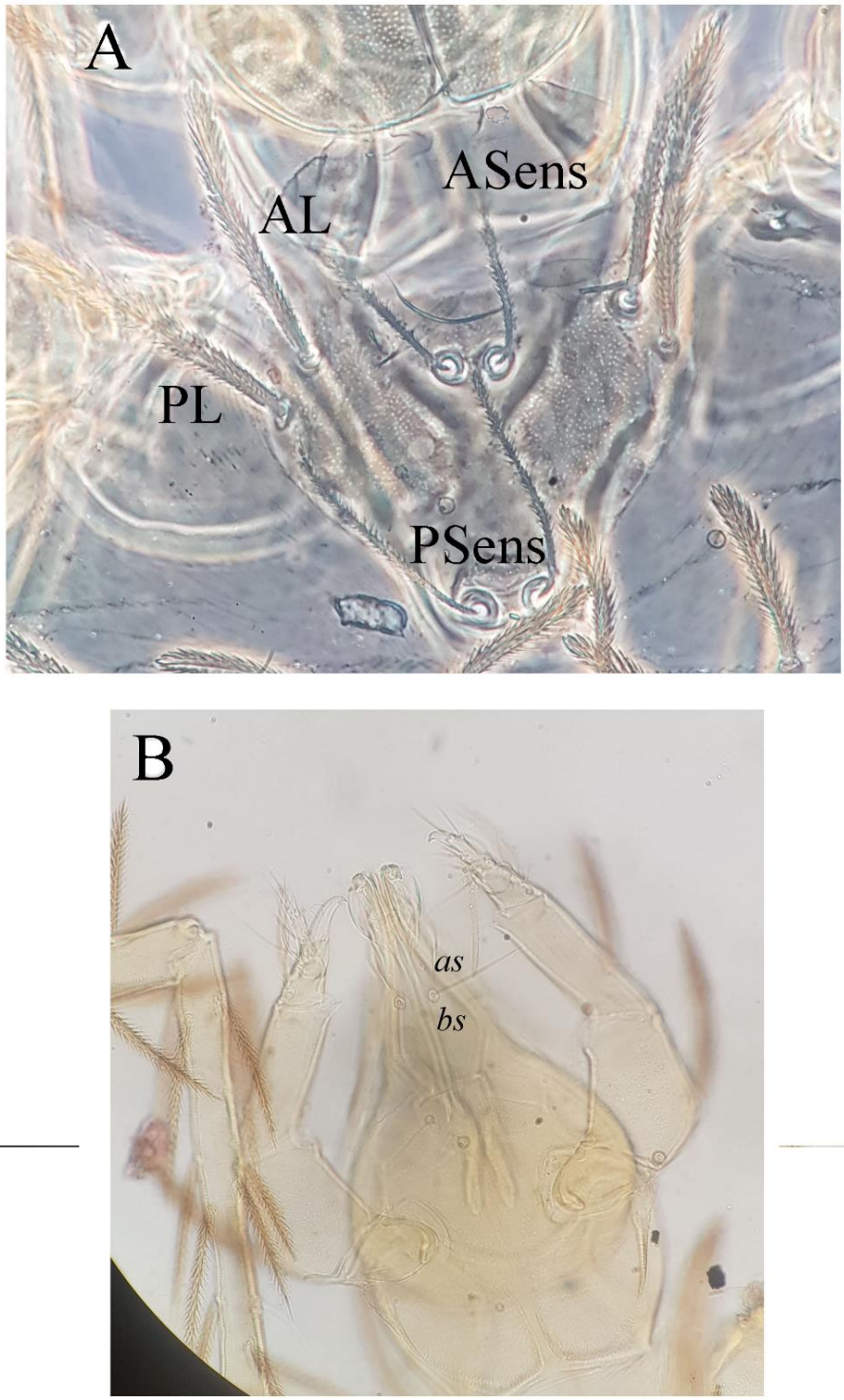

Figure 1 *Leptus* (*Leptus*) *slivovi* Beron, 1975 (larva). A. Scutum; B. Gnathosoma.

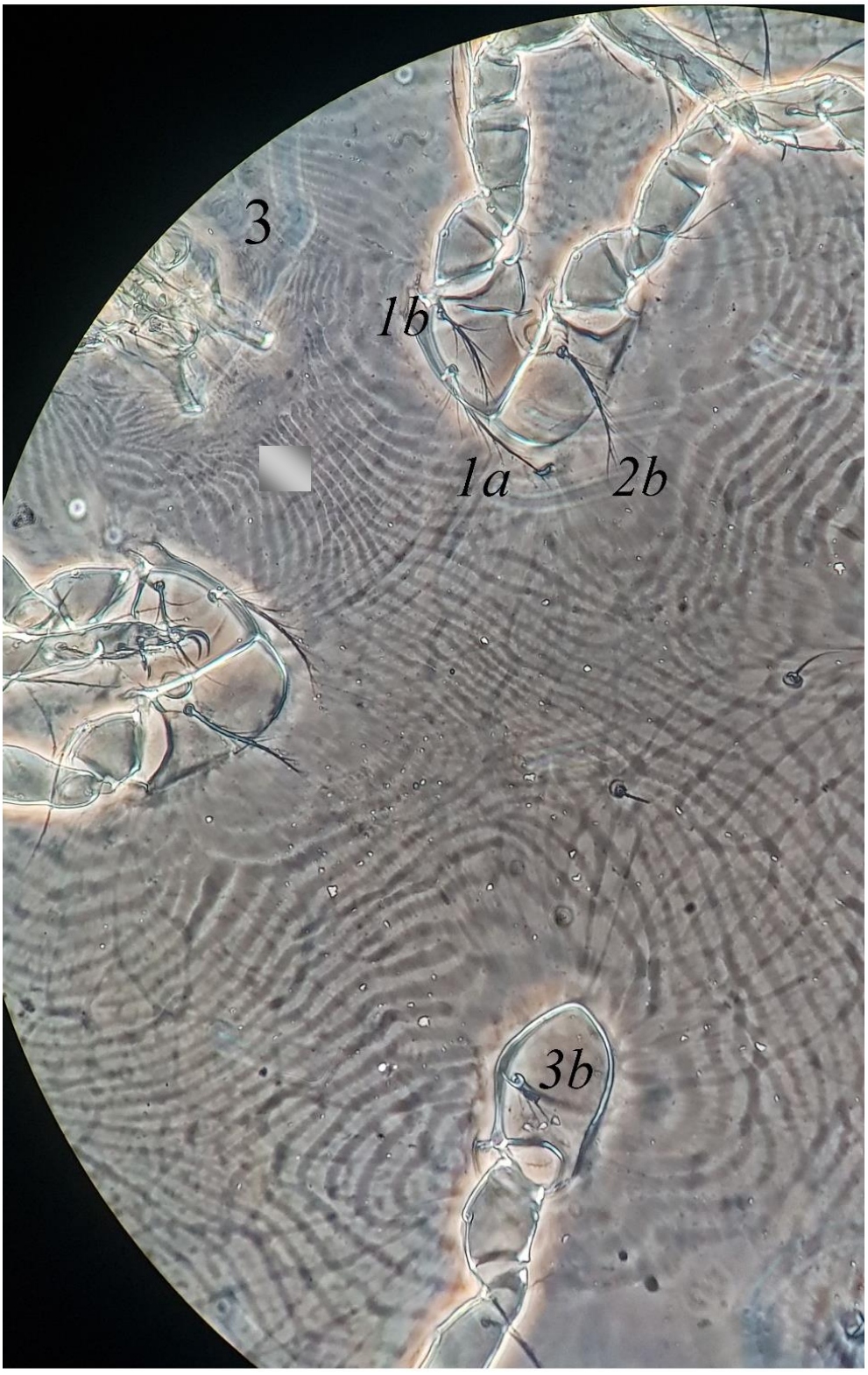

Figure 2 *Empitrombium makolae* Sevsay and Karakurt, 2013 (larva). Photo of ventral view of idiosoma.

Table 1 Metric and meristic data for *Leptus* (*Leptus*) *slivovi* larvae.

Character	Present Study (Türkiye) N = 1	Haitlinger, 1987 (Poland) N = ?	Beron, 1975 (Bulgaria) N = 11	Southcott, 1992 (Norway) N = 2
SD	116	100–137	115	96–99
W	104	104–121	110	103–115
AW	84	76–92	82	78–90
PW	101	94–114	97	95–106
AA	10	12–16	6	10–13
SB	12	10–20	15	18–20
ISD	67	60–75	67	58–61
AP	15	18–24	20	17–20
AL	79	70–90	75	58–69
PL	87	72–86	78	64–71
ASBM	15	–	12	9–11
ASBa	30	24–48	40	29–34
AAS	32	–	33	33–40
LX	32	–	21	22–24
ASens	40	40–66	45	50–54
PSens	62	70–84	72	65–73
GL	178	–	–	–
aHy	4	–	–	–
pHy	42	–	–	34
1a	57	42–66	–	–
1b	69	–	75	–
2a	55	–	–	–
2b	37	–	25	–
3b	55	–	40	–
DS	39–64	–	48–65	36–53
Ta I (L)	149	124–158	150	122–144
Ti I	198	170–198	200	149–191
Ge I	139	119–143	140	129
TFe I	92	84–101	–	–
BFe I	119	90–115	–	–
Tr I	55	44–57	–	–
Cx I	64	66–88	–	–
Leg I	816	–	–	–
Ta II (L)	129	116–137	135	110–130
Ti II	181	154–176	177	135–168
Ge II	116	104–119	120	112
TFe II	89	74–92	–	–
BFe II	81	82–97	–	–
Tr II	57	46–62	–	–
Cx II	94	90–110	–	–
Leg II	747	–	–	–
Ta III (L)	119	122–150	145	120–138
Ti III	228	202–233	228	187–228
Ge III	126	110–128	128	105–126
TFe III	106	90–104	–	–
BFe III	101	96–112	–	–
Tr III	54	52–66	–	–
Cx III	94	92–106	–	–
Leg III	828	–	–	–
IP	2391	–	–	–
TiI/AW	2.35	–	2.44	1.91–2.12
Ti III/AW	2.71	–	2.78	2.40–2.53
AL/AAS	2.47	–	2.27	1.73–1.85
No. setae between coxa II–III	8	8	8	8

Subfamily Erythraeinae
***Erythraeus* (*Erythraeus*) *ankaraicus* Saboori, Çobanoglu and Bayram, 2004**
Diagnosis
fn BFe I–III 3–3–3; fn Ti I–III 14–15–15; 250 < Ti III < 286; fV 14; AM < 25.

Distribution. Türkiye (Saboori *et al.*, 2004).

Material examined
One larva was collected on 1 June 2016 from garlic fields in Taşköprü–Kastamonu (Code number B–364).

Subfamily Abrolophinae
***Abrolophus balkanicus* Haitlinger and Šundić, 2015**

Diagnosis. Palpfemur with a projection, Ti III 65–100, palpal tibial claw, and accessory claw entire (not bifurcate).

Distribution.
Montenegro and Türkiye (with this new record).

Material examined
Two larvae from leaves of herbs, weeds, and lawn in garlic fields, and the grasses *Agropyron repens* (L.) and *Avena fatua* L. (Poaceae), 3 May 2015, Taşköprü (YB–21), Kastamonu city, Türkiye (41° 31' 14.78" N, 34° 11' 54.02" E).

Remarks
Haitlinger (1986) described *A. kazimierae*, a species very similar to *A. balkanicus*, based on one larva from Poland. He depicted the scutum, palp, and a part of the venter of the holotype. He described it briefly, for example, without leg segmentation formula and a number of setae posterior to coxae III. Haitlinger and Šundić (2015a) redescribed this species and recorded it from Montenegro for the first time with new morphological data and complete meristic data.

Haitlinger and Šundić (2015b) described *A. balkanicus*. They differentiated this species by having a blunt palp femoral projection and several measurements: the shorter AL (33–41 vs. 55–71 in *A. kazimierae*), PL (30–36 vs. 45–65), ASE (20–25 vs. 33–50), PSE (38–44 vs. 61–86), GL (82–92 vs. 99–116), PsFd (32–39 vs. 40–65), OD (12–15 vs. 16–19), and the shorter longest" dorsal setae (35–43 vs. 65–77).

First, the blunt vs. sharply pointed palp femoral projection is a major differentiating feature. Still, we believe this feature changes depending on its position when examined (based on the second author's observations). Nevertheless, the blunt projection in our specimens match that of *A. balkanicus*. Should the femoral projection not be diagnostic, then the measurements are the only way to separate these species. In this regard, our new specimens also fits *A. balkanicus* better than *A. kazimierae* (see Table 2).

The specimens collected from Türkiye extend the meristic and metric data of the species. The number of setae between coxae II and III is 12 in specimens from Türkiye. The projection on palpfemur not sharp; number of normal setae on TFe I 7/9 left/right sides (but 8 in holotype); number of normal setae on Ti II 13 (but 12 in holotype); number of normal setae on Ti III 13 (but 12 in holotype), fn Ta I-III 24-23-18 (but 24-19-16 in holotype).

Metric data of *A. kazimierae* and *A. balkanicus* collected from different areas are presented in Table 2. Further collections are required to test the metric differences for A. kazimierae and A. balkanicus further, which we regard as possible synonyms.

***Abrolophus poljankus* Haitlinger and Šundić, 2021**
Diagnosis
Palpal femur without projection; Ti III 64–74, palpal tibial claw bifurcate and accessory claw entire. Measurements are given in Table 3.

Distribution. Slovakia and Türkiye (with this new record).

Material examined
Two larvae collected on (*Agropyron repens* (L.) (Graminae) and (*Avena fatua* L.) (Poaceae) 3 May

2015 (YB–21), (N 41°31'14.78´´ E 34°11'54.02) from garlic fields Taşköprüü– Kastamonu.

Remarks

Haitlinger (2007d) described *A. sardiniensis* (Haitlinger, 2007) based on one larva from Italy, then Haitlinger and Šundić (2021) described *A. poljankus* from Slovakia. Comparison of these two species shows that the differential diagnosis between them is not enough to distinguish them. The main feature is that ASens are in line with AL in *A. poljankus* whereas ASens are between ALand PL in *A. sardiniensis* but the figures of the scutum not clear, and differences cited in Haitlinger and Šundić (2021) are interpreted as interspecific variations (see Table 3), so we suggest re-examination of the type species of *A. sardiniensis. Abrolophus poljankus* surely can be found in additional regions, as it has already been collected from Slovakia and Türkiye.

Notes about other *Abrolophus* species

Haitlinger (1986 and 2007a) described *A. stanislavae* and *A. podorasensis*, respectively. These are the only species among the Abrolophus species with a bifurcate accessory claw (paradont). An examination based on the literature of these two species showed that they are closely related. The shape of their scuta and metric data are the same and seems these species could be synonyms and these species should be studied further.

Mąkol and Wohltmann (2012) synonymized *A. silesiacus*, *A. neobrevicollis*, *A. striata*, *A. dagmarae* with *A. norvegicus*. However, Haitlinger and Łupicki (2015) rejected synonymization of *A. silesiacus* and *A. dagmarae* with *A. norvegicus*, but they synonymized *A. kotorensis* (Haitlinger, 2007) and *A. amilberti* (Haitlinger, 2010) with *A. silesiacus*. The metric data and shape of the odontus of *A. norvegicus* overlap with that of *A. dagmarae*, however, Haitlinger and Łupicki (2015) used the shape of odontus to distinguish between *A. norvegicus* and *A. dagmarae*. The position of the palp in mounted specimens is important to determine the true shape of the odontus. For this reason, after comparing the larvae of *A. norvegicus* and *A. dagmarae*, Mąkol and Wohltmann (2012) considered *A. dagmarae* a junior synonym of *A. norvegicus*.

Distinguishing characters between *A. silesiacus* and *A. norvegicus*, as given by Haitlinger and Łupicki (2015), have low weight for separating species, but Haitlinger (1986) as presented in Figure 13a depicted a projection on the palpfemur of *A. silesiacus* which separates these two species. One of the distinguishing characteristics of A. norvegicus is the structure of striated cheliceral bases; Wohltmann and Mąkol (2012) did not state this in the text of their paper, but it is shown in Figure 23. Also, the cheliceral bases of *A. striata* are striated, which is a very important characteristic. Because of this and the similarity of metric and meristic data, we agree with Wohltmann and Mąkol (2012) and confirm the synonymy of *A. striata* with *A. norvegicus*.

The striation of cheliceral bases is not shown in the figures of *A. dagmarae* and *A. silesiacus* so we cannot confirm or reject the synonymy of these species with *A. norvegicus* (Saboori *et al*., 2011; Mąkol and Wohltmann, 2012, 2013; Haitlinger and Łupicki, 2015). Hence, we report *A. norvegicus* (including *A. brevicollis*; *A. neobrevicollis*; *A. striata*, and *A. dagmarae*) and *A. silesiacus* (including *A. kotorensis* and *A. amilberti*) are two separate species based on the presence of the palpfemoral projection.

Noei (2022) wrote an identification key for species of *Abrolophus* without a comb-like seta on the palpal tarsus. Still, he emphasized meristic data such as number of setae on segments of legs. In contrast, Saboori *et al*. (2020) instead emphasized metric data and thought the number of normal setae on TFe-Ta was too variable as a criterion for taxonomic decisions. The new identification key is presented for this reason and the discussion above. Also, for some meristic data see Table 4.

Table 2 Metric data of *Abrolophus kazimierae* from Poland, Austria, Slovakia, Slovenia, Bulgaria, Romania and Montenegro (A1), and *A. balkanicus* from Türkiye (A2) and from Montenegro (A3).

Character	A1	A2	A3	Character	A1	A2	A3
SD	57–82	64–70	58–65	TFe I	29–40	30–32	28–33
W	54–76	52–53	49–59	Bfe I	36–56	35–37	41–44
AW	34–44	31–32	28–36	Tr I	32–44	32–37	31–36
PW	47–58	46–50	42–49	Cx I	45–57	50–52	44–55
AA	8–14	10–12	9–13	Leg I	312–372	312–325	307–341
SB	10–15	14–17	10–12	Ta II (L)	40–57	45–50	45–52
ISD	36–53	46–47	41–49	Ti II	50–68	57–59	52–61
AP	16–28	19–20	18–24	Ge II	48–63	52–54	49–52
AL	55–71	35	33–41	Tfe II	24–32	25–27	22–27
PL	45–65	33–52	30–36	Bfe II	24–48	37–47	31–39
ASens	33–50	30–44	20–25	Tr II	31–44	40–45	33–37
PSens	61–86	56–66	38–44	Cx II	52–77	57–61	55–71
DS	28–77	25–45	21–43	Leg II	294–366	318–370	335–375
1a	33–52	30–37	32–39	Ta III (L)	48–60	45–53	46–52
2a	17–39	28–31	26–33	Ti III	68–90	82–97	70–79
3a	21–34	28–32	23–36	Ge III	61–73	67–87	57–63
1b	40–58	43–44	33–40	Tfe III	32–43	37–48	31–36
2b	28–48	25–30	22–32	Bfe III	32–51	32–45	35–44
3b	32–44	26–30	28–36	Tr III	32–46	30–40	35–39
GL	99–116	89–94	82–92	Cx III	54–68	57	53–62
Ta I (L)	52–63	47–55	51–58	Leg III	351–409	373–404	335–375
Ti I	52–72	50–62	54–66	IP	960–1144	1003–1099	950–1026
Ge I	62–67	57–61	48–56				

Table 3 Metric and meristic data of *A. sardiniensis* from Italy (A1), *A. poljankus* from Türkiye (A2) and from Slovakia (A3).

Character	A1	A2	A3	Character	A1	A2	A3
SD	54	52	59–65	No. setae behind coxa III	23	20	20–22
W	48	50	53–61	fV	41	40	–
AW	32	30	29–34	Ta I (L)	52	57	47–52
PW	42	43	46–51	Ti I	54	59	54–59
AA	10	9	11–12	Ge I	56	59	52–59
SB	12	12	12–14	TFe I	30	32	26–29
ISD	34	37	45–49	Bfe I	34	37	35–40
AP	12	17	18–24	Tr I	30	32	26–34
AL	18	33	19–21	Cx I	44	45	40–48
PL	30	31	25–31	Leg I	300	321	294–320
ASens	18	28	25–28	Ta II (L)	46	46	41–48
PSens	44	50	46–50	Ti II	48	59	50–55
DS	–	30–37	20–45	Ge II	50	50	51–52
1a	14	32	19–23	Tfe II	22	25	22–27
2a	16	30	19–29	Bfe II	30	30	32–35
3a	–	25	18–26	Tr II	30	37	33–37
1b	34	40	34–40	Cx II	54	64	55–61
2b	22	22	18–25	Leg II	280	311	295–305
3b	20	25	20–22	Ta III (L)	48	47	44–52
GL	88	99	74–84	Ti III	66	74	64–71
as_1	–	7	6–7	Ge III	58	64	56–59
as_2	12	12	11–12	Tfe III	34	34	30–36
bs	17	30	24–30	Bfe III	36	37	35–45
cs	18	19	14–21	Tr III	36	45	33–38
fD	44	46	40–46	Cx III	52	59	52–61
No. intercoxalae I–II	4	4	4*	Leg III	330	360	327–354
No. intercoxalae II–III	14	16	14	IP	910	992	920–979

* Haitlinger and Šundić (2021) cited there are six setae between coxae I and II but in figure 2 there are four setae between them.

Table 4 Some meristic data of the genus *Abrolophus* with a comb–like seta on palptarsus.

Character	***A. baardi***	***A. gracilentus***	***A. kazimierae***	***A. nivalis***	***A. norvegicus***	***A. parvum***	***A. podorasensis***	***A. silesiacus***	***A. poljankus***
Shape of odontus	not bifurcate (entire)	not bifurcate	not bifurcate	bifurcate	bifurcate	not bifurcate	bifurcate	bifurcate	bifurcate
Shape of accessory claw on plapal tibia	not bifurcate	not bifurcate	not bifurcate	–	not bifurcate	–	bifurcate	not bifurcate	not bifurcate
Cheliceral bases ornamentation	punctate	punctate	punctate	–	punctate and striated	–	punctate	punctate	punctate
Palpfemur with/ without projection	without	without	with	–	without	–	without	with	without
Ti III	114–130	–	52–79	–	84–108	–	58–68	70–104	64–71
Character	***A. sardiniensis***	***A. stanislavae***	***A. viburnicolus***	***A. willmanni***	***A. wratislaviensis***	***A. yanlingicus***	***A. marianopolicus***	***A. hajiqanbari***	
Shape of odontus	bifurcate	bifurcate	bifurcate	not bifurcate	not bifurcate	bifurcate	bifurcate	trifurcate	
Shape of accessory claw	not bifurcate	bifurcate	not bifurcate	–	not bifurcate	not bifurcate	not bifurcate	not bifurcate	
Cheliceral bases ornamentati	punctate	punctate	punctate	–	punctate	punctate	punctate	punctate	
Palpfemur with/ without projection	without	without	without	–	without	without	without	without	
Ti III	66	65–85	85	–	52–70	127*	78–94	107–120	

*Calculated from original figure.

Key to species of *Abrolophus* without a comb-like seta on the palptarsus (larva)

Descriptions of *A. parvus* (Schweizer and Bader, 1963); *A. nivalis* (Schmölzer, 1956) and *A. willmanni* (Schweizer, 1951) are incomplete and therefore they are not included in the key. Note that Haitlinger and Šundić (2018) prepared a key to larval *Abrolophus* without a comb–like seta but it included only 14 species, i.e., three species were not included.

1. Palpfemur with a projection……..2
– Palpfemur without a projection……..……4
2. Odontus entire …….....……3
– Odontus bifurcate…….....…… .....*A. silesiacus* (Haitlinger,1986)
3. AL 55–71..... *A. kazimierae* (Haitlinger, 1986)
– AL 33–41..... *A. balkanicus* Haitlinger and .....Šundić, 2015
4. Cheliceral bases with striation..... .....*A. norvegicus* (Thor, 1900)
– Cheliceral bases without striation (punctate)..5
5. Odontus not bifurcate……...…….6
– Odontus bifurca…..…….....……...…….9
6. Palpal tibial claw trifurcate (without deep incision)..... *A. hajiqanbari* Noei, 2022
– Palpal tibial claw entire.....7
7. Number of setae between coxae II and III 40….....*A. gracilentus* (Willmann, 1937)
– number of setae between coxae II and III < 30…8
8. Ti III 114–130…….....…… .....*A. baardi* (Haitlinger, 2004)
– Ti III 52–70…….....… .....*A. wratislaviensis* (Haitlinger, 1986)
9. Accessory claw (paradont) of palpal tibia bifurcate….....….....10
– Accessory claw (paradont) of palpal tibia entire…….……..11
10– Ta I 50–56, fD 52–56, palp genualae nude..... *A. stanislavae* (Haitlinger, 1986)
– Ta I 40–44, fD 36, palp genualae barbed..... ..... *A. podorasensis* (Haitlinger, 2007)
11. Ti III 127… *A. yanlingicus* (Zheng, 2002)
– Ti III < 95…….....…….....……12
12. SD < 65; 13
– SD > 70; ..... ……..……..…14
13. AL and PL nude; ISD 34..... .....*A. sardiniensis* (Haitlinger, 2007)
– AL and PL barbed; ISD 45–49..... .....*A. poljankus* Haitlinger and Šundić, 2021
14. AL 52; PL 45; 6 setae in line with scutum (3 setae around each eye)..... ..... *A. viburnicolus* (Fain and Çobanoğlu, 1998)
– AL 21–33; PL 29–37; 4 setae in line with scutum (2 setae around each eye)..... ..*A. marianopolicus* Haitlinger and Šundić, 2018

Family Calyptostomatidae Oudemans, 1923
***Calyptostoma velutinum* (Müller, 1776)**
Diagnosis

One normal setae on Tr III; Number of normal setae on Ge II and Ta II > 5; Ge III with microseta; microseta on Ge I, Ti I, and Ge II entire and claws

of legs I–III without subterminal prong; Ta I with ≥ 5 solenidia, subcapitulum with one pair of setae.

Distribution. Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, France, Germany, Great Britain, Greece, Hungary, Italy, Japan, Norway, Poland, Portugal (Madeira), Romania, Russia, Slovenia, Switzerland, Sweden, The Netherlands and Türkiye (Mąkol and Wohltmann, 2012).

Material examined

One larva of *Calyptostoma velutinum* was collected on 31 May 2017 by the light trap (unknown host) in Sarıkum-Sinop Sarıkum Nature Reserve.

Microtrombidiidae Thor, 1935
Microtrombidiidae *incertae sedis*
***Empitrombium makolae* Sevsay and Karakurt, 2013**

Distribution. Iran and Türkiye.

Diagnosis (Sevsay and Karakurt, 2013)

Gnathosoma with horseshoe–like sclerite bearing large denticled membranes outside. Palp femur and genu bearing one spine-like seta each and palp tibia with three nude setae. Palpal tibia with median constriction setae bs in shape of stout calyx, distally seven finger-like extensions. Surface of scutum bears three pairs of nonsensillary setae and one pair of sensillary setae. Smooth up to AM bases and the whole remaining part striate and punctate. fCx formula: BB-B-B. Tarsal claws formula: 2-2-3. Ta III terminated with two falciform claws and a slender claw-like empodium. Lophotrix and scopa absent on tarsus III.

Measurements are given in Table 5.

Remarks

Empitrombium mąkolae was described based on active postlarval forms and larvae obtained from adult females under laboratory conditions by Sevsay and Karakurt (2013). Noei *et al*. (2015) recorded this species from Iran and drew its gnathosoma correctly, but in the original description (Sevsay and Karakurt, 2013), the setulae of coxalae I-III are not correct (the coxalae have many short setulae in Fig. 1 in original description), so we provide a photo of coxalae I–III (coxalae have few long setulae-Fig. 2).

Material examined

Two larvae from garlic fields, 1 June 2016 (Code no: Yb 61, Yb 52) in Kastamonu–Taşköprü.

Family Trombidiidae
***Allothrombium clavatum* Saboori, Pešić and Hakimitabar, 2010**

Table 5 Metric data for *Empitrombium mąkolae* larvae.

Character	Present study	Present study	Sevsay and Karakurt (2013)	Noei *et al*. (2015)
SD	131	121	132*	112–134
W	121	111	114*	104–129
AW	89	92	84–90	82–101
PW	92	97	86–100	87–101
AA	37	37	37–44	
SB	57	59	53–59	52–62
ASB	0	0	85–102	82–104
PSB	0	0	26–32	30–35
AP	45	45	33–38	40–45
MA	0	0	48–61	52–62
AL	54	47	52–59	52–67
PL	62	52	51–58	50–67
AM	45	40	43–54	54–74
S	62	57	62–69	74–87
SL	77	69	–	64–82
SS	37	30	–	30–42
HS	50	47	43–62	40–52
LSS	111	104	94–113	99–111
DS	0	0	44–76	57–82
PDS	0	0	36–53	–
or	0	0	8–13	–
bs	9.9	9.9	9–11	–
1a	59	57	52–71	59–74
1b	57	54	48–57	57–71
2b	59	50	46–57	54–67
3a	30	32	20–29	25–37
3b	67	62	48–59	59–69
Ta I (L)	109	104	94–104	99–119
Ti I	47	50	41–46	40–52
Ge I	30	30	24–28	30–35
Fe I	59	50	34–55	50–62
Tr I	42	42	29–48	30–40
Cx I	59	62	61–79	64–71
Leg I	347	337	302–334	313–371
Ta II (L)	87	97	82–95	84–101
Ti II	45	50	41–46	45–52
Ge II	25	22	21–27	25–30
Fe II	54	50	40–53	52–64
Tr II	45	40	32–38	30–37
Cx II	69	64	60–80	62–71
Leg II	324	322	281–328	298–349
Ta III (L)	77	89	89–96	82–106
Ti III	47	54	40–52	50–57
Ge III	30	27	23–30	25–35
Fe III	62	62	48–59	57–69
Tr III	45	45	32–42	35–42
Cx III	69	59	61–68	64–71
Leg III	329	337	307–334	313–375
IP	1000	996	903–979	924–1092

***** Measurements calculated from Fig. 17 in Sevsay and Karakurt (2013).

Diagnosis (based on Saboori, Pešić and Hakimitabar, 2010)
Dorsal idiosomal setae clavate; AL and PL clavate, AM pointed; coxa II with one seta; tarsus III with reduced inner claw.

Distribution. Montenegro and Türkiye (This species was identified as an ectoparasite of aphids in the parks and and gardens of Aydın–Türkiye (Öner *et al.*, 2021)).

Material examined
Two larvae, Kastamonu–Taşköprü, from growing garlic fields, 1 June 2016, (Code No:Yb 61, Yb 52).

***Allothrombium meridionale* Berlese, 1910**
Diagnosis
See Wohltmann and Mąkol (2009).

Distribution. France, Germany, Greece, Hungary, Italy, Kazakhstan, Moldova, Romania, Spain, Ukraine and Türkiye.

Material examined
Two larvae Kastamonu–Taşköprü, from growing garlic fields on *Avena fatua* L. (Poaceae); 1 June 2016, (Code No: Yb 61, Yb 52).

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گزارش‌هایی از کنه‌های Parasitengona (Trombidiformes: Prostigmata) از ترکیه به‌همراه گزارش‌های جدید

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چکیده: در بررسی فونیستیک روی کنه‌ها در استان‌های قسطمونی و سینوپ در مجاورت دریای سیاه کشور ترکیه طی سال‌های ۲۰۱۳-۲۰۱۷، برخی از نمونه‌های لارو کنه‌های پارازیتنگونا از خاک و تله‌های نوری جمع‌آوری شدند. گونه‌های شناسایی شده عبارتند از:
Allothrombium، *Erythraeus* (*E.*) *ankaraicus* Saboori, Çobanoğlu and Bayram 2004، *Abrolophus kazimierae* (Haitlinger, 1986)، *clavatum* Saboori, Pešić and Hakimitabar, 2010، *Allothrombium meridionale* Berlese, 1910، *Abrolophus poljankus* Haitlinger and Šundić, 2021، *Leptus* (*Leptus*) *slivovi* Beron, 1975 و *Calyptostoma velutinum* (Müller, 1776).
در این مطالعه گونه‌های *Abrolophus*، *Leptus* (*Leptus*) *slivovi* Beron, 1975، *poljankus* Haitlinger and Šundić, 2021 و *Abrolophus balkanicus* Haitlinger and Šundić, 2015 برای فون کنه‌های ترکیه جدید هستند. هم‌چنین، کلید شناسایی گونه‌های *Abrolophus* جهان بدون موهای شانه‌وش بر روی پنجه پالپ به‌روز شد.

واژگان کلیدی: آرایه‌شناسی، Trombidiformes، ترکیه، *Abrolophus*، *Leptus* (*Leptus*) *slivovi*، گزارش‌های جدید، پراکنش