

## Article

### **New records of mites (Acari: Erythraeidae, Microtrombidiidae, Tanaupodidae) from southern Italy, with descriptions of two new species**

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#### **Abstract**

Two new species: *Hauptmannia dagmarae* **sp. nov.** and *Lassenia castronuoviensis* **sp. nov.** from Italy are described and illustrated. *Hauptmannia kotorensis*, *Leptus* (*Leptus*) *hammameiticus*, *Erythraeus* (*Zaracarus*) *preciosus* and *Valgothrombium valgum* are reported for the first time from Italy.

**Key words:** Acari, Erythraeidae, Microtrombidiidae, Tanaupodidae, new species, new records, Italy

#### **Introduction**

In Italy the fauna of Erythraeidae based on adults is well known: 31 species were mentioned by Beron (2008). Moreover, the following species based on larvae or larvae and adults were found hitherto: *Erythraeus* (*Erythraeus*) *malwinae* Haitlinger, 1995, *Charletonia krendowskyi* (Feider, 1954), *C. cardinalis* (Pallas, 1774), *C. berlesiana* Paoli, 1937, *C. austisensis* Haitlinger, 2007, *C. cuglierensis* Haitlinger, 2007, *Balaustium nikaе* Haitlinger, 1996, *B. murorum* (Hermann, 1804), *Italustium eframi* Haitlinger, 2000, *Abrolophus norvegicus* (Thor, 1900), *A. quisquiliarus* (Hermann, 1804), *Leptus* (*Leptus*) *beroni* Fain, 1992, *L. (L.) molochinus* (C. L. Koch, 1837), *L. (L.) josifovi* Beron, 1975, *L. (L.) pozzoicus* Haitlinger, 2007, *L. (L.) slivovi* Beron, 1975, *L. (L.) meloidarum* Beron, 1975, *L. (L.) dubius* (Paoli, 1937), *L. (L.) mariaе* Haitlinger, 1987, *L. (L.) trimaculatus* (Rossi, 1791), *Phanolophus oedipodarum* (Frauenfeld, 1868), *Hauptmannia sardiniensis* Haitlinger, 2002 and *Marantelophus multisetosa* (Zhang & Goldarazena, 1996) found in San Marino (Haitlinger 2007c, Beron, 2008).

From Italy from the subfamily Valgothrombiinae (based on larvae) only *Valgothrombium natani* Haitlinger, 2005 was known and from family Tanaupodidae no species were known hitherto.

In this paper two new species are described from Italy and four species are reported for the first time.

## Material and methods

19 larvae of mites were collected 10 May – 11 June 2010 in southern Italy, in Sicily, Basilicata and Campagna regions. 17 larvae were obtained from herbaceous plants, one larva from undetermined Tenebrionidae and one larva from undetermined Hemiptera (Insecta). All larvae were preserved in 70% ethanol and mounted in Berlese's fluid. The terminology and abbreviations are adapted from Haitlinger (1995, 2002). Measurements are given in micrometers ( $\mu\text{m}$ ). Holotypes of the new species are deposited in the Museum of Natural History, Wrocław University (MNHWU), Poland and paratypes are deposited in author's collection.

## Results and discussion

### Family Erythraeidae Robineau-Desvoidy, 1828

#### *Hauptmannia kotorensis* Haitlinger, 2007

##### *Material examined*

One larva, 25 May 2010, Cerami, 970 m (Sicily region, Enna prov.), one larva, 17 May 2010, Lago Trinita passo Castelvetro (Sicily region, Trapani prov.), one larva, 13 May 2010, Valguamera (Sicily region, Enna prov.), two larvae, 31 May 2010, Lago di Pian del Leone (Sicily region, Palermo prov.), one larva, 12 May 2010, Baucina (Sicily region, Palermo prov.).

*Distribution:* Croatia, Italy, Montenegro, Slovenia (Haitlinger, 2007a). First record from Italy.

#### *Hauptmannia dagmarae* sp. nov. (Figs. 1–8)

##### *Diagnosis*

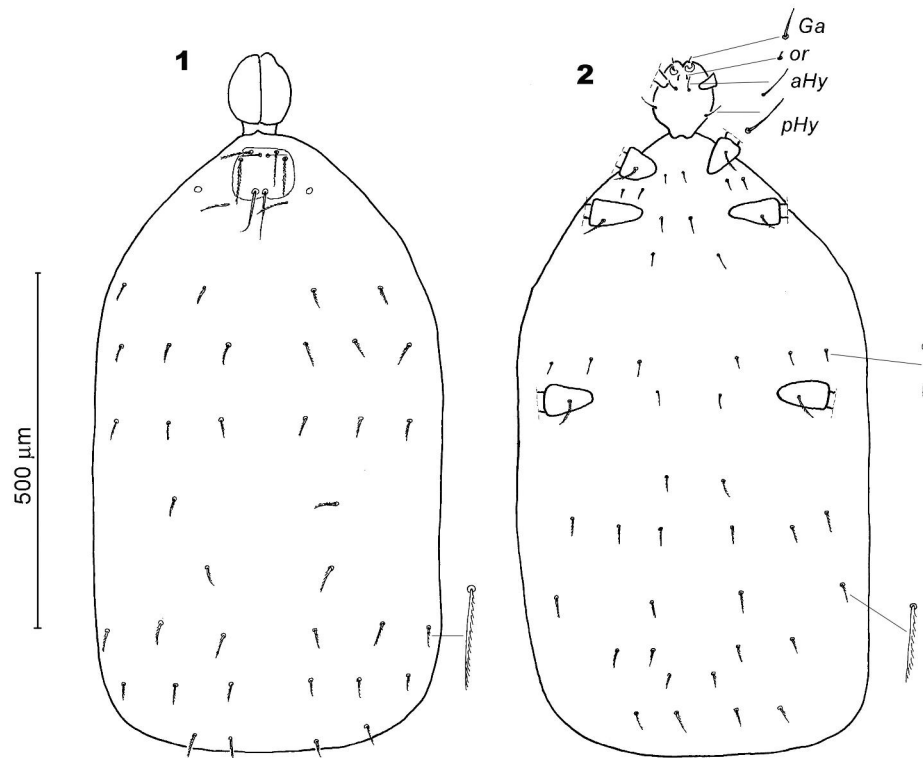
fD = 38, (36), fV 22, TaI 70 (56–66), TiIII 87 (74–92), ISD 52 (40–51), AL 32 (31–33), L 62 (58–67), W 72 (60–69), palpal tibial claw not divergent.

##### *Description (Larva)*

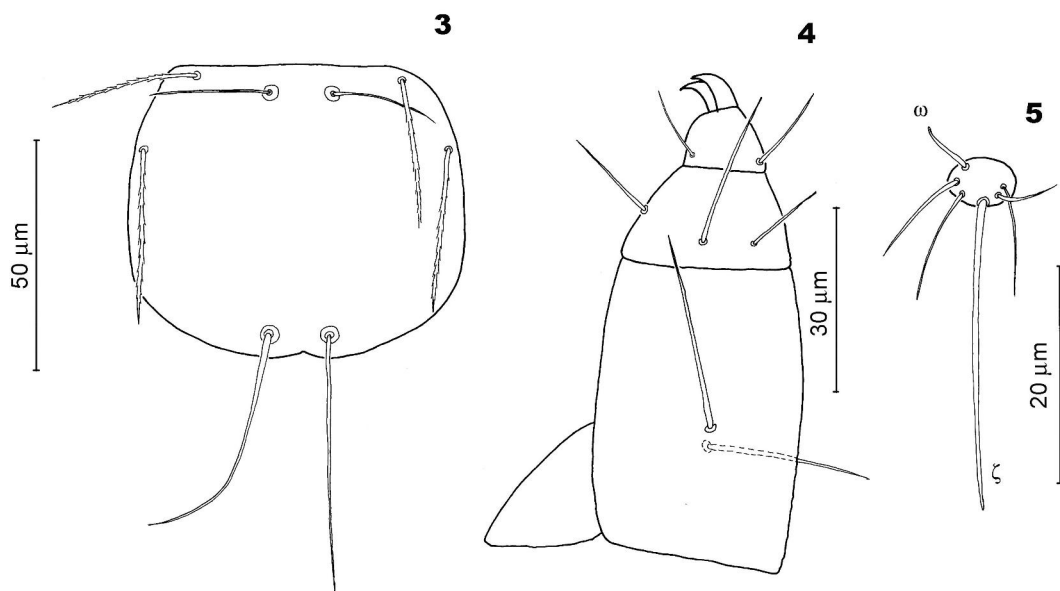
For measurements see Table 1.

Dorsum with 38 weakly barbed setae. One eye on each side of idiosoma (Fig. 1). Dorsal scutum wider than long (in one paratype L=W) with two pairs of weakly barbed scutalae. Two pairs of sensillary setae, both nude (Fig. 3). Idiosoma ventrally with setal pair *1a*, two pairs of setae between coxae I and II, between coxae II setal pair *2a*. Between coxae II and III 8 setae and a pair of setae *3a*; 22 setae behind coxae III; barbed setae at posterior part of opisthosoma only. Coxalae *1b* longer than coxalae *2b* and *3b*; all coxalae with very short setulae (Figs. 2 & 6–8).

Gnathosoma with smooth galealae (17  $\mu\text{m}$ ), short setae or (5  $\mu\text{m}$ ) and aHy (19  $\mu\text{m}$ ) and relatively long pHy (37  $\mu\text{m}$ ) (Fig. 2). Palpfemur with two nude setae, palpgenu with 3 nude setae and palptibia short (12  $\mu\text{m}$  wide, 7  $\mu\text{m}$  long), with 2 nude setae and an accessory claw. Palptibial claw entire, very short (8–10  $\mu\text{m}$ ), accessory claw the same length as palptibial claw (Fig. 4). Palptarsus with 6 nude setae (including  $\zeta$  and  $\omega$ ) (Fig. 5).



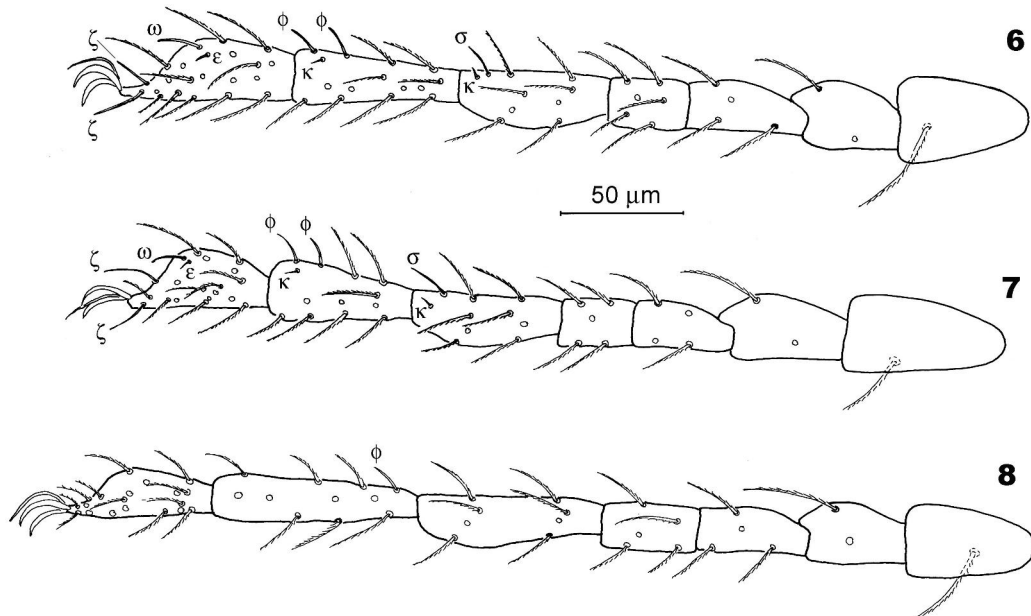
**Figures 1–2.** *Hauptmannia dagmarae* sp. nov. (larva). 1. Idiosoma and gnathosoma, dorsal view 2. Idiosoma and gnathosoma, ventral view.



**Figures 3–5.** *Hauptmannia dagmarae* sp. nov. (larva). 3. scutum; 4. palp; 5. Palp-tarsus.

Leg setal formula: Leg I: Ta 1 $\omega$ , 1 $\epsilon$ , 2 $\zeta$ , 18, Ti 2 $\phi$ , 1 $\kappa$ , 12, Ge 1 $\sigma$ , 1 $\kappa$ , 8, Tf 6; Bf 4, Tr 2, Cx 1 (Fig. 6). Leg II: Ta 1 $\omega$ , 1 $\epsilon$ , 2 $\zeta$ , 16, Ti 2 $\phi$ , 1 $\kappa$ , 10, Ge 1 $\sigma$ , 1 $\kappa$ , 8, Tf 5,

Bf 4, Tr 2, Cx 1 (Fig. 7). Leg III: Ta 19, Ti 1φ, 10, Ge 8; Tf 5, Bf 4, Tr 2, Cx 1 (Fig. 8). Leg lengths: leg I 372 holotype, 335–374 paratypes, II 362, 327–355, III 404, 381–416. IP = 1138 holotype, 1043–1121 paratypes.



**Figures 6–8.** *Hauptmannia dagmarae* sp. nov. (larva). 6. Leg I; 7. Leg II; 8. Leg III.

#### *Type material*

Holotype larva, Italy, Lago di Pian del Leone, Sicily region, Palermo prov., 31 May 2010 from herbaceous plants, deposited in MNHWU; leg. R. Haitlinger; paratypes, four larvae: one larva, 31 May 2010, the same data as holotype, collected from larva of undetermined Hemiptera (attached to thorax), one larva, 31 May 2010, Palazzo Adriano, 696 m a.s.l., Sicily region, Palermo prov., one larva, 30 May 2010, Casacangio n. Santa Catterina Villamosa, Sicily region, Caltanissetta prov., one larva, 16 May 2010, Pioppo, Sicily region, Palermo prov., all from herbaceous plants.

#### *Etymology*

The name of the species was derived from the name Dagmara.

#### *Remarks*

The genus *Hauptmannia* includes 17 species: *H. miyatakei* Kawashima, 1958, *H. trifarius* Shiba, 1976, *H. gracilenta* Willmann, 1937, *H. yanlingica* Zheng, 2002, *H. parvum* Schweizer & Bader, 1963, *H. baardi* Haitlinger, 2002, *H. kazimierae* Haitlinger, 1986, *H. viburnicola* Fain & Cobanoglu, 1998, *H. wratislaviensis* Haitlinger, 1986, *H. silesiacus* Haitlinger, 1986, *H. stanislavae* Haitlinger, 1986, *H. kotorensis* Haitlinger, 2007, *H. podorasensis* Haitlinger, 2007, *H. sardiniensis* Haitlinger, 2007, *H. amilberti* Haitlinger, 2010 and *H. striata* Saboori, Šundić & Pešić, 2011 (Willmann, 1937, Kawashima, 1958, Schweizer & Bader, 1963, Shiba, 1976, Haitlinger, 1986, 2002, 2007a, b, 2010, Southcott, 1994, Zheng, 2002, Saboori *et al.*, 2011). *Hauptmannia dagmarae* sp. nov. belongs to the species group with entire palpal tibial claw and without long setulose setae on palptarsus. This group

includes: *H. gracilentata*, *H. yanlingica*, *H. parvum*, *H. baardi*, *H. kazimierae* and *H. wratislaviensis*. It differs from all these species in shorter palpal tibial claw, accessory claw the same length as palpal tibial claw and very narrow palptibia. Moreover, it differs from *H. gracilentata* in AM bases placed posterior to AL setae (vs. AM bases placed anterior to AL setae), shorter L (58–67 vs. 77) and longer W (60–72 vs. 57); from *H. yanlingica* in the shorter L (58–67 vs. 95), W (60–72 vs. 122), AW (39–48 vs. 83), ISD (40–52 vs. 61) and AL (31–33 vs. 73); from *H. parvum* in fD (38 vs. ~30), the shorter Ta I (56–70 vs. 90) and Ti I (57–70 vs. 84); from *H. baardi* in fD (38 vs. 47), the shorter L (58–67 vs. 80–90), ISD (40–52 vs. 58–64), AL (31–33 vs. 54–68), PL (36–42 vs. 54–64), AM (22–23 vs. 48–54), S (54–61 vs. 80–98), GL (97–118 vs. 120–130) and Ti III (74–92 vs. 114–130); from *H. kazimierae* in the shorter AL (31–33 vs. 50–68), PL (36–42 vs. 52–64), longer Ta I (56–70 vs. 48–56), Ta II (52–59 vs. 40–48) and Ta III (53–61 vs. 44–50) and from *H. wratislaviensis* in longer AW (39–48 vs. 32–36), PW (56–66 vs. 40–50), AL (31–33 vs. 22–28), PL (36–42 vs. 24–28),  $W \geq L$  vs.  $L > W$ , Ta I (56–70 vs. 42–48), Ti III (74–92 vs. 52–68) and fD (38 vs. 46).

**Table 1.** Metric data for *Hauptmannia dagmarae* sp. nov. (larva). H – holotype, P – paratypes.

	H	P	P	P	P		H	P	P	P	P
IL	832	495	502	368	–	GeI	63	70	70	66	62
IW	476	298	318	216	–	TfI	32	28	34	29	30
L	62	58	62	67	60	BfI	46	40	40	41	39
W	72	60	62	69	64	TrI	39	38	42	39	36
AW	48	39	42	42	39	CxI	52	58	56	48	51
PW	66	57	56	60	59	TaII	59	58	52	54	52
AA	13	10	12	13	13	TiII	59	64	56	54	52
SB	13	10	16	13	15	GeII	63	60	62	65	55
ISD	52	40	44	51	49	TfII	28	26	26	28	27
AP	16	14	18	16	15	BfII	40	38	39	38	36
AL	32	31	32	33	31	TrII	45	42	42	42	43
PL	36	39	40	39	42	CxII	68	68	62	58	62
AM	23	22	–	–	22	TaIII	61	56	58	56	53
S	56	54	–	61	54	TiIII	87	92	86	76	74
GL	110	112	118	106	97	GeIII	75	72	74	67	68
DS	33–40	34–42	32–44	28–37	32–41	TfIII	39	44	38	38	38
PsFd	33	–	–	–	36	BfIII	45	46	44	43	40
PsGd	31	–	–	–	–	TrIII	40	42	44	42	51
<i>Ia</i>	38	–	–	–	–	CxIII	57	64	60	63	57
TaI	70	56	66	60	60	IP	1138	1121	1117	1065	1043
TiI	70	60	66	58	57	<i>Ib</i>	46	–	–	–	48

### *Leptus (Leptus) hammameticus* Haitlinger, 1998

#### Material examined

One larva from undetermined Tenebrionidae (Insecta: Coleoptera), 24 May 2010, Lido Rosello n. Realmonte (Sicily region, Agrigento prov.).

*Distribution*: Italy, Tunisia. This species was known only from Tunisia, where was collected from undetermined Tenebrionidae (Haitlinger, 1998). First record from Italy.

***Erythraeus (Zaracarus) preciosus* Goldarazena & Zhang, 1998**

*Material examined*

Two larvae, 28 May 2010, ~1500 m a.s.l. ~near Rifugio Citelli (Sicily region, Catania prov.).

*Distribution*: Greece, Italy, Spain, Ukraine (Haitlinger, 2008). First record for Italy.

***Charletonia krendowskyi* (Feider, 1954)**

*Material examined*

One larva, 11 June 2010, Scanzano (Basilicata region, Matera prov.). In Italy this species was known only from Colla Luna (Abruzzo region, Chieti prov.) (Haitlinger, 2007c). Second record from Italy.

**Family Microtrombidiidae Thor, 1935**

**Subfamily Valgothrombiinae Gabryś, 1999**

***Valgothrombium valgum* (George, 1909)**

*Material examined*

One larva, 17 May, 2010, Lago Madonna delle Grazie, Sicily region, Palermo prov.

*Distribution*: Germany, Great Britain, Ireland, Italy, Poland. First record from Italy.

**Family Tanaupodidae Thor, 1935**

***Lassenia castronuoviensis* sp. nov.** (Figs. 9–16)

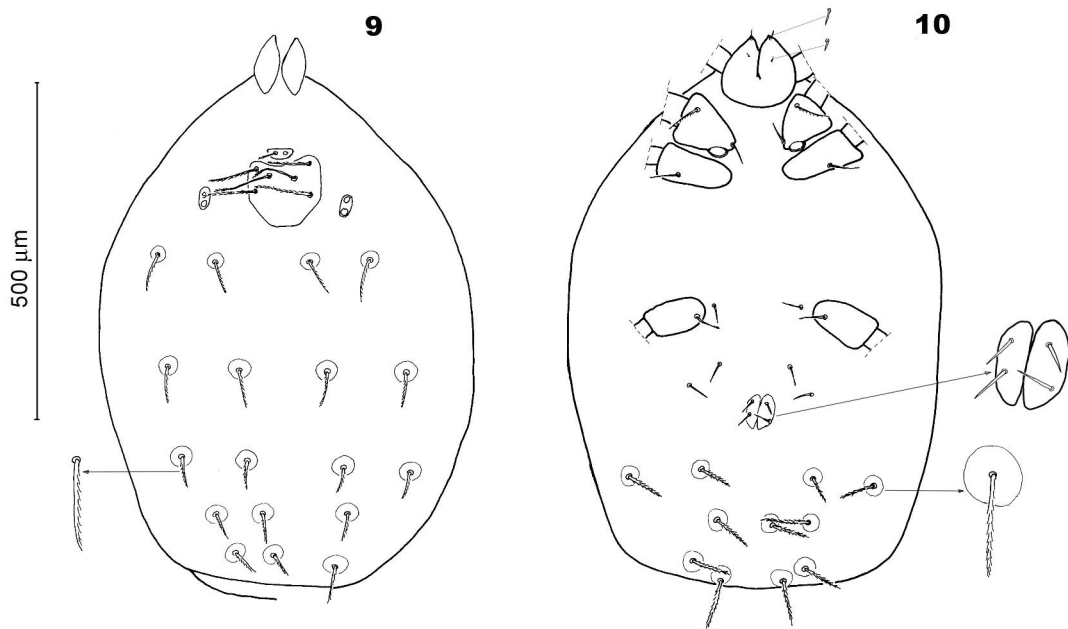
*Diagnosis*

fD 18, fV 19, L 125, W 107, AW 90, PW 78, TaI 136, TiIII 105.

*Description (Larva)*

For measurements see Table 2.

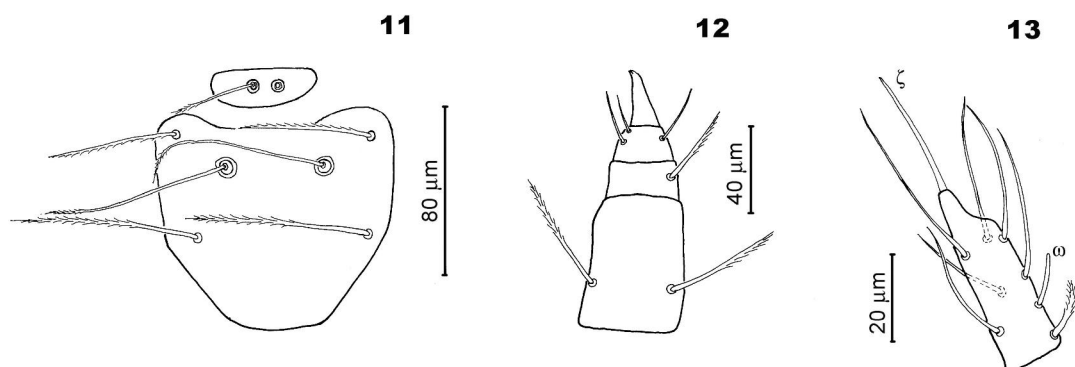
Dorsum with 18 slightly barbed setae placed on platelets, arranged 4, 4, 4, 3, 3. Eyes 2+ 2, circular, placed on ocular sclerites (Fig. 9). Scutum divided into a small anterior portion bearing the anterior short sensilla (AM) with very short setulae in about ½ their distal part. The larger portion of scutum with AL and PL scutalae, both with short setulae. Sensillary setae S with short setulae in their ½ distal part. Distance between bases of AM is distinctly shorter than distance between bases of S (AA < SB). Scutalae AL shorter than scutalae PL (Fig. 11, Table 2).



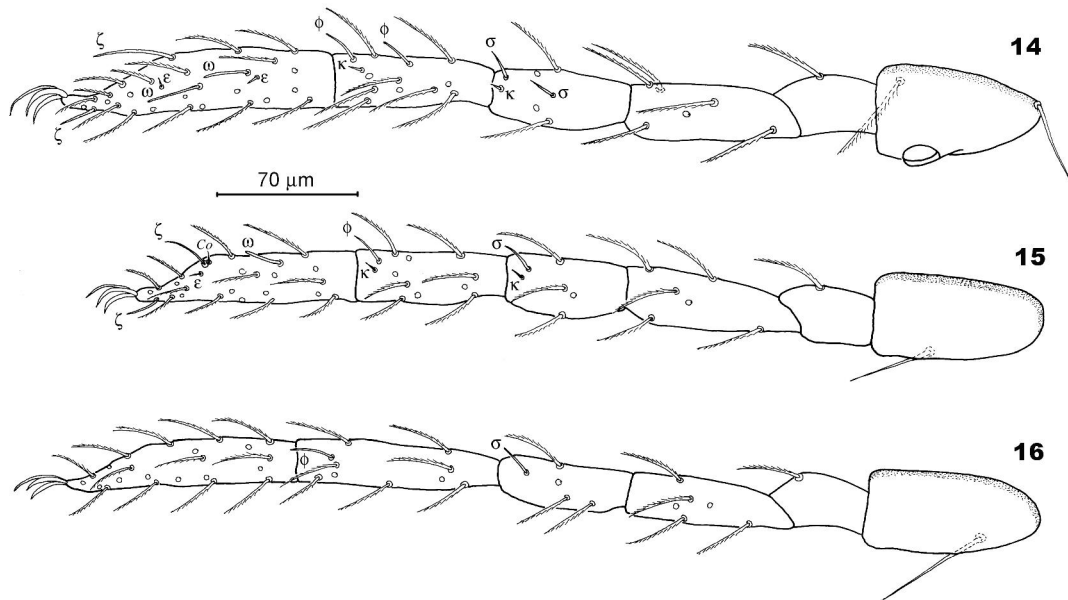
**Figures 9–10.** *Lassenia castronuoviensis* sp. nov. (larva). 9. Idiosoma and gnathosoma, dorsal view; 10. Idiosoma and gnathosoma, ventral view.

Ventral side of idiosoma bears 23 setae: 2 setae *1a* at coxae I, 2 setae *3a* between coxae III, 4 short setae between coxae III and anus, 4 short setae on anal sclerites and 11 setae behind anus; among them 8 anterior setae are thin and nude, 11 posterior setae barbed and distinctly longer and thicker than anterior setae. Two nude setae between coxae III. Coxala *1b* slightly barbed, coxalae II and III, both nude (Fig. 10).

Gnathosoma relatively short bearing short and nude hypostomale and galealae. Palpfemur with two weakly barbed setae, palpgenu with one weakly barbed seta and palptibia with 3 nude setae (Fig. 1). Palptarsus long with 6 relatively long and nude setae; one short seta bearing some setulae at its base. Short solenidion ( $\omega$ ) placed in proximal part of palptarsus, eupathidium ( $\zeta$ ) placed distally (Fig. 13).



**Figures 11–13.** *Lassenia castronuoviensis* sp. nov. (larva). 11. scutum; 12. palp; 13. palptarsus.



**Figures 14–16.** *Lassenia castronuoviensis* sp. nov. (larva). 14. Leg I; 15. Leg II; 16. Leg III.

**Table 2.** Metric data for *Lassenia castronuoviensis* sp. nov. (larva).

Character	Holotype	Character	Holotype	Character	Holotype
IL	730	PL	85	CxI	91
IW	508	AM	38	TaII	112
L	125	S	88	TiII	65
W	107	DS	60–80	GeII	58
AW	90	1a	44	FeII	88
PW	78	1b	54	TrII	45
AA	13	2b	40	CxII	86
SB	43	3b	63	TaIII	118
ASB	80	GL	106	TiIII	105
PSB	45	TaI	136	GeIII	63
ISD	35	TiI	80	FeIII	87
MA	39	GeI	62	TrIII	52
AP	46	FeI	89	CxIII	87
AL	60	TrI	50	IP	1474

Leg setal formula: Leg I: Ta 2 $\omega$ , 2 $\epsilon$ , 2 $\zeta$ , 23B, Ti 2 $\phi$ , 1 $\kappa$ , 10B, Ge 2 $\sigma$ , 1 $\kappa$ , 4B, Fe 6B, Tr 1B, Cx 1B, 1N (Fig. 14). Leg II: Ta 2 $\omega$ , 1 $\epsilon$ , 1Co, 2 $\zeta$ , 21B, Ti 1 $\phi$ , 1 $\kappa$ , 10B, Ge 1 $\sigma$ , 1 $\kappa$ , 4B, Fe 6B Tr 1B, Cx 1N (Fig. 15). Leg III: Ta 22B, Ti 1 $\phi$ , 9B, Ge 1 $\sigma$ , 4B, Fe 6B, Tr 1B, Cx 1N (Fig. 16). Leg lengths: leg I 508, leg II 454, leg III 512. IP = 1474.

*Type material*

Holotype larva, Italy, Castronuovo di Sicilia, Sicily region, Palermo prov. 30 May 2010 from herbaceous plants, deposited in MNHWU, leg. R. Haitlinger

### Etymology

This species is named after Castronuovo di Sicilia where the holotype was collected.

### Remarks

The genus *Lassenia* Newell, 1957 includes 4 species based on larvae or larvae and adults: *L. lassenii* Newell, 1957, *L. scutellata* Newell, 1957 both from USA, *L. furcasetosa* Zhang, 1988 from China and *L. xymenae* Haitlinger, 1995 from Poland and Austria (Newell, 1957, Zhang, 1988, Haitlinger, 1995, 2007c). *L. castronuoviensis* **sp. nov.** differs from *L. lassenii* in shape of scutum (its anterior portion not attached to posterior portion vs. anterior portion attached to posterior portion) and coxae II and III, both with one seta (vs. coxae II with 2 setae and coxae III with 3-4 setae); from *L. scutellata* in coxae II and III, both with one seta (vs. coxae II and III, each with 2 setae); from *L. furcasetosa* in fV (19 vs. 10–13) and Ta I with 23 normal setae (vs. 31–33 setae) and from *L. xymenae* in fV (19 vs. 10), the longer PW (78 vs. 63–68), longer Ta I (136 vs. 102–112), Ti I (89 vs. 58–72), Ta III (118 vs. 100–106), Ti III (105 vs. 84–90), IP (1474 vs. 1300-1416) and coxa II with one seta (vs. with 2 setae).

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#### چکیده

*Lassenia castronuoviensis* و *Hauptmannia dagmarae* **sp. nov.** دو گونه جدید به نام‌های *Leptus (Leptus) Hauptmannia kotorensis* **sp. nov.** توصیف و ترسیم شدند. گونه‌های *Valgothrombium valgum* و *Erythraeus (Zaracarus) preciosus hammameticus* برای اولین بار از ایتالیا گزارش می‌شوند.