

***Dasitrombium margeritanum* sp. n., *Leptus tiranicus* sp. n. and the first record of *L. olafi* HAITLINGER (Acari: Prostigmata: Neothrombiidae, Erythraeidae) ectoparasitic on Orthoptera and Diptera (Insecta) from Margerita, Venezuela**

RYSZARD HAITLINGER

Department of Zoology and Ecology, Agricultural University, Koźuchowska 5b, 51-631 Wrocław, Poland, e-mail: rhait@ozi.ar.wroc.pl

ABSTRACT. *Dasitrombium margeritanum* sp. n. and *Leptus tiranicus* sp. n. are described and illustrated basing on ectoparasitic larvae of undetermined Orthoptera and Diptera (Asilidae) (Insecta) from Margerita (Venezuela). *Leptus olafi* HAITLINGER is reported for the first time from Venezuela.

KEY WORDS: Acari, Neothrombiidae, Erythraeidae, *Dasitrombium*, *Leptus*, Orthoptera, Diptera, Asilidae, new species, new record, ectoparasites, Margerita, Venezuela.

INTRODUCTION

From Venezuela no species of the genus *Dasitrombium* ZHANG 1994 were known and only one species of the genus *Leptus* LATREILLE 1796: *L. sieversi* (OUDEMANS). Following species recognized as larvae have been described in the genus *Dasitrombium*: *D. arizonaicum* ZHANG 1994 from USA and *D. clarissae* HAITLINGER 2000 from Nicaragua (ZHANG 1994, HAITLINGER 2000c). The genus *Leptus* based only on larvae is widespread in all parts of the world. In Neotropical Region 26 species were known hitherto: *Leptus (Amarucoptes) vuki* HAITLINGER 2000, *L. (Leptus) maldonadoicus* HAITLINGER 2000, *L. (L.) hringuri* HAITLINGER 2000, *L. (L.) annikae* HAITLINGER 2000, all from Peru, *L. (L.) ariel* SOUTHCOTT 1989 from Guatemala and Peru, *L. (L.) simonettae* HAITLINGER 2000 from Guatemala, *L. (L.) iguacicus* HAITLINGER 2004, *L. (L.) stieglmayri* (OUDEMANS 1912), *L. (L.) adaminae* HAITLINGER 2004, *L. (L.) alberti* HAITLINGER 1991, *L. (L.) fozicus* HAITLINGER 2004, *L. (L.) cyryli* HAITLINGER 1991, *L. (L.) mariani* HAITLINGER 1991, *L. (L.) stolae* HAITLINGER 1987, all from Brazil, *L. (L.) onnae* HAITLINGER 2000, from Mexico and Brazil, *L. (L.)*

lomani (OUDEMANS 1912), *L. (L.) ursyni* HAITLINGER 1991, *L. (L.) schedingi* (OUDEMANS 1912), all from Chile, *L. (L.) olafi* HAITLINGER, 1991, *L. (L.) stefani* HAITLINGER, 1991 both from Colombia, *L. (L.) sieversi* (OUDEMANS 1912) from Venezuela, *L. (L.) oudemansi* (KARPINEN 1958) (= *L. (L.) gracilipes* (OUDEMANS 1912) from Surinam, *L. (L.) gagzoi* (OUDEMANS 1912) from Panama and Trinidad, *L. (L.) nikanori* HAITLINGER 2000 from Costa Rica, *L. (L.) filipinae* HAITLINGER 2000 from Costa Rica, Belize and Mexico and *L. (L.) cabareticus* HAITLINGER 2004 from Dominican Republic (OUDEMANS 1912, KARPINEN 1958, HAITLINGER 1987, 1991, 2000a, b, 2004a, b).

In this paper the third species of the genus *Dasitrombium* and the second species of the genus *Leptus* from Venezuela from undetermined Asilidae (Diptera) and undetermined Orthoptera are described and *L. olafi* is reported the first time from Venezuela and new figures are given.

MATERIAL AND METHODS

Some Orthoptera and one specimen of Asilidae were collected by me in Playa Parguito n. El Tirano in Margerita, Venezuela during November 2005. 51 specimens of larval *Dasitrombium* ZHANG and 11 specimens of larval *Leptus* LATREILLE, representing a new species described below. *D. margeritanum* was found on wings; three specimens of *Leptus tiranicus* were found on body of an undetermined Asilidae (Diptera) and seven specimens were found on legs of an undetermined Orthoptera. A single specimen of *Leptus olafi* was found on leg of an undetermined Orthoptera.

All specimens were preserved in ethanol and then mounted in the Berlese's medium. The terminology of structures and setal notation follow ZHANG (1994) and HAITLINGER (2000a). All measurements are given in micrometers.

The type material is deposited in the Museum of Natural History, Wrocław University, Poland (MNHWU).

DESCRIPTION

Neothrombiidae FEIDER, 1959

***Dasitrombium margeritanum* sp. n.**

(Figs 1-6)

Diagnosis

fD = 34, fV = ~60, fSol I(0-2-2-1), II(0-0-2-1), III(0-1-0-0), AL 24-32, PL 24-28, TaI 76-80, Ip = 830-876, coxalae and hypostomalae nude.

Description

Idiosoma with 34 dorsal setae arranged 2-2-2-8-8-5-3-4. Scutum with punctation, $L > W$. AL and PL setae with very short barbs. AM setae with very short barbs, sensillary setae S nude. Scutellum punctate, with 12 setae (in paratypes: 1 with 10 setae, 2 with 11, 21 with 12, 18 with 13, 7 with 14 and 1 with 15 setae); width about twice longer than median length. Two pairs of eyes on one pair of sclerites; anterior eye in diameter larger than the posterior (Fig. 1).

Idiosoma ventrally with two nude intercoxalae setae. ~60 setae behind coxae III, among these in posterior part of opisthosoma, 9 slightly barbed setae. All coxalae nude (Fig. 2). Gnathosoma with nude hypostomalae, Palptibia with 3 nude setae; palptarsus with 6 nude setae (Fig. 3).

Leg setal formula. Leg I: Ta 1 ω , 1 ζ , 16N; Ti 2 ϕ , 6N; Ge 2 σ , 4N; Fe 6N; Tr 1N; Cx 1N (Fig. 4). Leg II: Ta 1 ω , 15N; Ti 2 ϕ , 5N; Ge 1 σ , 4N; Fe 4N; Tr 1N; Cx 1N (Fig. 5). Leg III: Ta 12N; Ti 5N; Ge 1 σ , 4N; Fe 4N; Tr 1N; Cx 1N (Fig. 6).

Legs length (including coxae, excluding claws): I 290 holotype, 274-290 paratypes, II 280, 254-280, III 306, 282-306. IP = 876 holotype, 816-876 paratypes.

Measurements are given in Table 1.

Material examined

Holotype larva, Venezuela. Margerita, Playa Parguito n. El Tirano, from wings of undetermined Orthoptera, leg. R. HAITLINGER (26 November 2005); 50 paratypes, same data as for holotype (18-26 November 2005).

Etymology

Named after the island where the holotype was collected.

Remarks

D. margeritanum sp. n. differs from *D. arizonaicum* in nude hypostomalae, coxalae and most of dorsal and ventral setae nude vs all these setae barbed, all nude palptarsalae and palptibialae vs all barbed palptibialae and most of palptarsalae; setae on legs nude vs setae on legs barbed, GeI 2 σ vs GeI 4 σ and fV 60 vs 32-44; from *D. clarissae* in longer AW (42-48 vs 38-40), PW (50-52 vs 44-48), AL (24-30 vs 16-22), shorter L (70-78 vs 80-84), TaI (76-80 vs 110-114) and TiIII (42-46 vs 62-66).

Erythraeidae ROBINEAU-DESVOIDY, 1828

Leptus tiranicus sp. n.

(Figs 7-17)

Diagnosis

One palpgenuala, four intercoxalae, L 90-92, W 96-110, AL 58-64, PL 56-62, TaI 156-172, TiIII 234-260.

Description

Dorsal surface of idiosoma with ~46 setulose setae. One eye on each side of idiosoma (Fig. 7). Dorsum with cuticular lines at bases of AL. Anterior border concave, AL slightly longer or shorter than PL, both nude (Fig. 9).

Ventral surface of idiosoma with two setae 1a, two setae 2a and four setae 3a (lateral setae about twice shorter than middle setae), all setulose. Behind coxae III 18 setulose setae. NDV = 64. Coxalae I distinctly longer than coxalae II and III. Gnathosoma long with nude hypostomalae. Palpfemur and palpgenu each with one setulose seta; palpgenu bears longitudinal line. Palptibia with 3 barbed setae (Fig. 10). Palptarsus with 6 setae (1B, 5N) (Fig. 11).

Leg setal formula. Leg I: Ta 1 ω , 1 ζ , 12B; Ti 2 ϕ , 1 κ , 12B; Ge 1 σ , 1 κ , 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Figs 12-13). Leg II: Ta 1 ω , 1 ζ , 12B; Ti 2 ϕ , 16B; Ge 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Figs 14-15). Leg III: Ta 16B; Ti 1 ϕ , 12B; Ge 8B; Tf 5B; Bf 1B; Tr 1B; Cx 1B (Figs 16-17).

Legs length: I 792 holotype, 824-872, II 690, 698-740, III 832, 844-922. IP = 2314 holotype, 2366-2534.

Measurements are given in Table 1.

Table 1. Metric data for *Dasitrombium margeritanum* sp. n. (1) and *Leptus tiranicus* sp. n. (2). H - holotype, P - paratypes.

	1		2			1		2	
	H	P=15	H	P=9		H	P=15	H	P=9
IL	336	291-590	565	406-1054	2b			28	26-30
IW	260	368-603	349	260-736	3b			50	40-44
AW	48	44-50	86	80-88	PsFd			58	56-60
PW	52	50-54	102	90-100	PsGd			44	42-44
L	78	70-76	92	90-92	Tal	78	76-78	156	154-172
W	64	62-70	106	96-110	Til	38	32-36	190	184-204
AAS	38	32-38	12	12	Gel	28	26-30	134	132-148
SB	32	30-34	14	14-16	Tfl*	54	48-54	94	96-110
ASB	58	50-56			Bfl			94	94-106
PSB	20	20-22			Trl	34	26-32	50	48-64
AL	28	24-32	64	58-66	Cxl	58	54-64	74	70-82
PL	28	24-26	58	54-62	Tall	78	70-78	132	128-146
AM	30	26-34	42	42-46	Till	36	30-36	162	156-172
S	40	36-48	70	66-76	Gell	26	24-30	104	92-114
SA	32	28-34			Tfll*	52	38-46	82	80-88
sP	14	14-18			Bfll			74	74-94
aP	20	18-22	18	18-20	Trll	30	28-36	52	48-56
GL	66	60-72	174	172-184	Cxll	58	50-64	84	74-86
ISD	50	48-52	58	50-58	Talll	90	80-84	144	146-164
DS	28-32	24-36	32-40	28-42	Tilll	46	42-46	234	228-260
HS	50	44-58			Gelll	26	26-32	114	112-120
LSS	114	80-120			Tflll*	50	42-52	116	114-124
1a			48	34-42	Bflll			92	92-114
2a			44	42-50	Trlll	38	32-42	54	48-58
3a	30	28-30			Cxlll	56	52-60	76	74-90

* for *D. margeritanum* FeI, FeII, FeIII.

Material examined

Holotype larva, Venezuela, Margerita, Playa Parguito n. El Tirano from body of undetermined Asilidae (Diptera), leg. R. HAILLING (20 November 2005); 2 paratypes same data as holotype, 7 paratypes from legs of undetermined Orthoptera, El Tirano (16 November 2005), Playa Parguito (20, 26 November 2005).

Etymology

Named after the place where holotype was collected.

Remarks

L. (L.) tiranicus sp. n. belongs to the species group of *Leptus* bearing one seta on palpgenu, four setae between coxae II-III, TiIII 210-280 and TaI 130-180. In American species to this group belong: *L. (L.) filipinae* HAITLINGER, *L. (L.) annikae* HAITLINGER, *L. (L.) californicus* SOUTHCOTT, *L. (L.) albertensis* SOUTHCOTT, *L. (L.) cercopioides* SOUTHCOTT, *L. (L.) cercophilus* SOUTHCOTT, *L. (L.) sayi* SOUTHCOTT and *L. (L.) bakeri* SOUTHCOTT (SOUTHCOTT 1992, HAITLINGER 2000a, b). *L. (L.) tiranicus* differs from *L. (L.) filipinae* in fD (46 vs 36), the shorter ISD (50-58 vs 60-64), PL (54-62 vs 72-80), DS (34-44 vs 42-60) and TiI-TiIII with 12 setae vs 14 setae; from *L. (L.) annikae* in fV (18 vs 22), the shorter AL (58-66 vs 74), PL (54-62 vs 72), GL (172-184 vs 228), 1b (68-86 vs 92) and TiIII (228-260 vs 280); from *L. (L.) californicus* in the shorter ISD (50-58 vs 69), longer AL (58-66 vs 42), PL (54-62 vs 37) and TiIII (228-260 vs 215); from *L. (L.) albertensis* in fD (46 vs 103), fV (18 vs 30), the shorter PL (54-62 vs 73) and DS (34-44 vs 42-59); from *L. (L.) cercopioides* in fD (46 vs 58), the shorter W (96-110 vs 120), PL (56-62 vs 75) and DS (34-44 vs 44-50); from *L. (L.) cercophilus* in the shorter TiI (184-204 vs 196-234), TiIII (226-260 vs 257-298), W (96-110 vs 109-116), longer S (66-76 vs 55-66) and ϵ I absent vs ϵ I present; from *L. (L.) sayi* in fD (46 vs 91), the shorter ISD (50-58 vs 70), PL (54-62 vs 82), DS (34-44 vs 48-58) and TiIII (228-260 vs 270) and from *L. (L.) bakeri* in fD (46 vs 166), the shorter W (96-110 vs 110-125) and DS (34-44 vs 40-70). OUDEMANS (1912) described 6 species of *Leptus* without metric data and is impossible to determine what of them belong to this group of species. The comparison *L. (L.) tiranicus* with these species is based on figures and descriptions. It differs from *L. (L.) lomani* in all scutalae placed on scutum vs scutal setae PL off scutum and palpgenu with one seta vs two setae; from *L. (L.) schedingi* in telofemur without solenidia vs 3 solenidia; from *L. (L.) stieglmayri* in GeII without solenidion vs GeII with one solenidion; from *L. (L.) oudemansi* in four setae between coxae II-III vs two setae; from *L. (L.) gagzoi* in longer L (90-92 vs 75), L/W (0.83-0.96 vs 0.75), AM and S nude vs distal half of AM and S ciliated, line at bases of AM present vs such line absent, shorter leg I (792 vs ~940), palptarsus with one seta bearing short setules vs one seta with long setules and from *L. (L.) sieversi* in longer leg I (792 vs 432).

Leptus olafi HAITLINGER, 1991

(Figs 18-25)

Material examined

1 ♀, Venezuela, Margarita, Playa Parguito n. El Tirano (20 November 2005) from leg of an undetermined Orthoptera. This species was known from Colombia from undetermined Cicindellidae (Coleoptera) (HAITLINGER 1991). It is the first record from Orthoptera. In the description of this species were given only figures of scutum, gnathosoma and position of specialized setae on tarsus, tibia and genu I. Therefore, I give all figures usually used in

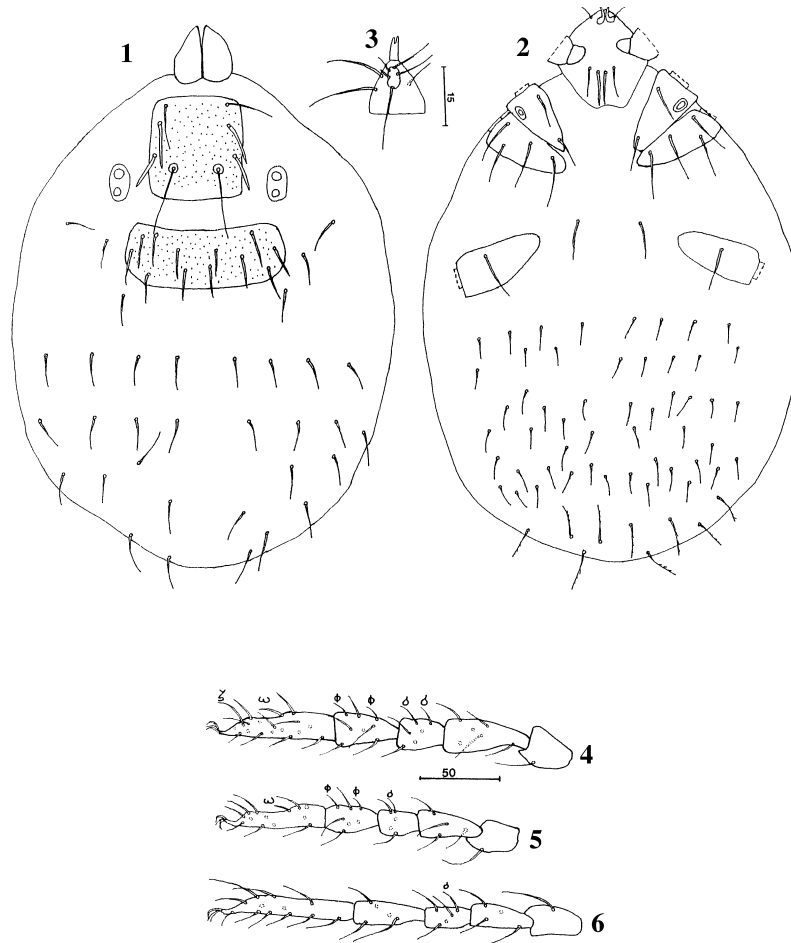
descriptions of larval Erythraeidae. Measurements for specimen from Margerita and for specimens from Colombia are given in Table 2.

Table 2. Metric data for *Leptus olafi* HAILINGER from Venezuela (1) and Colombia (2).

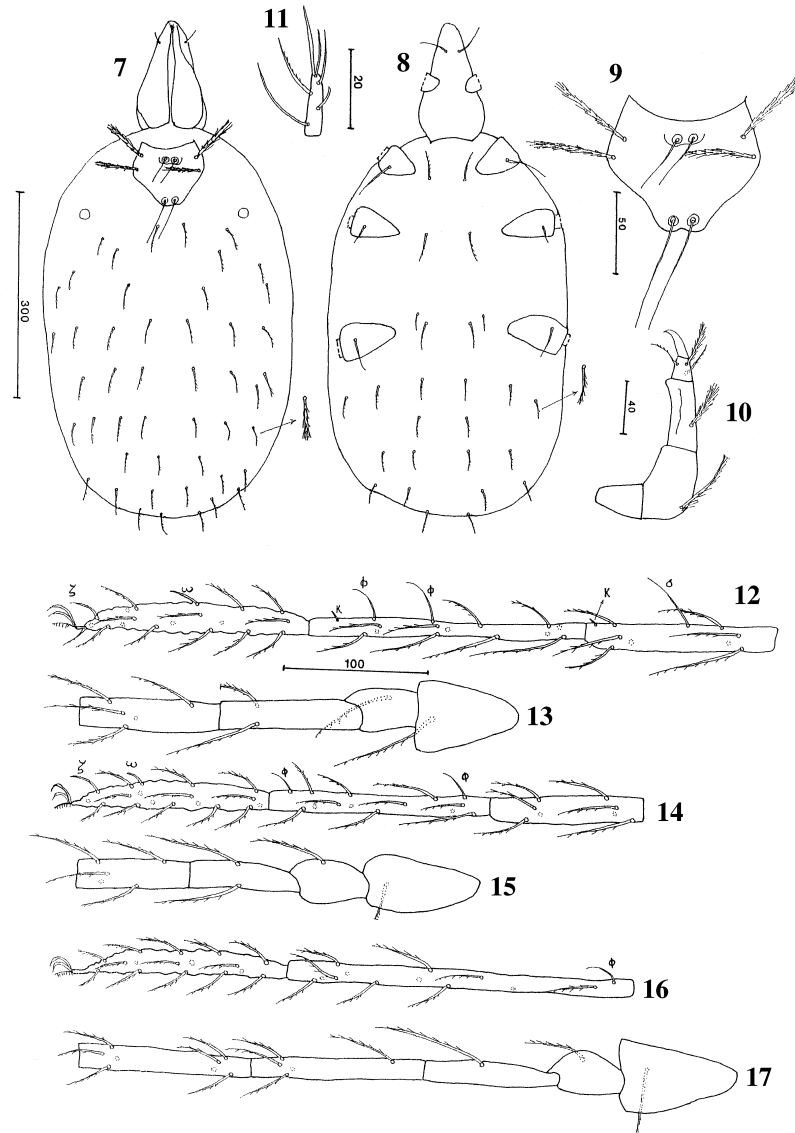
	1	2		1	2
IL	457	782-960	Tal	106	110-120
IW	286	304=608	Til	110	116-124
AW	80	74-80	Gel	90	80-94
PW	90	84-98	Tfl	60	64-74
L	90	70-72	Bfl	68	64-72
W	96	94-102	Trl	44	40-44
AA	10	12-14	Cxl	62	60
SB	12	12-14	Tall	90	92-94
AL	46	50-54	Till	94	106
PL	50	54-60	Gell	70	78-82
AM	30	40-44	Tfll	52	62
S	-	64-80	Bfll	52	50-52
AP	14	14-16	Trll	42	42
GL	180	124-142	Cxll	66	68
ISD	56	44-50	Talll	102	110
DS	36-42	32-40	Tilll	134	150-164
1a	32	40	Gelll	78	80-90
2a	34		Tflll	64	80-86
1b	50	64-70	Bflll	64	68-72
2b	24	36	Trlll	44	42-44
3b	40	-	Cxlll	64	54-62
PsFd	46		PsGd	38	

Acknowledgement

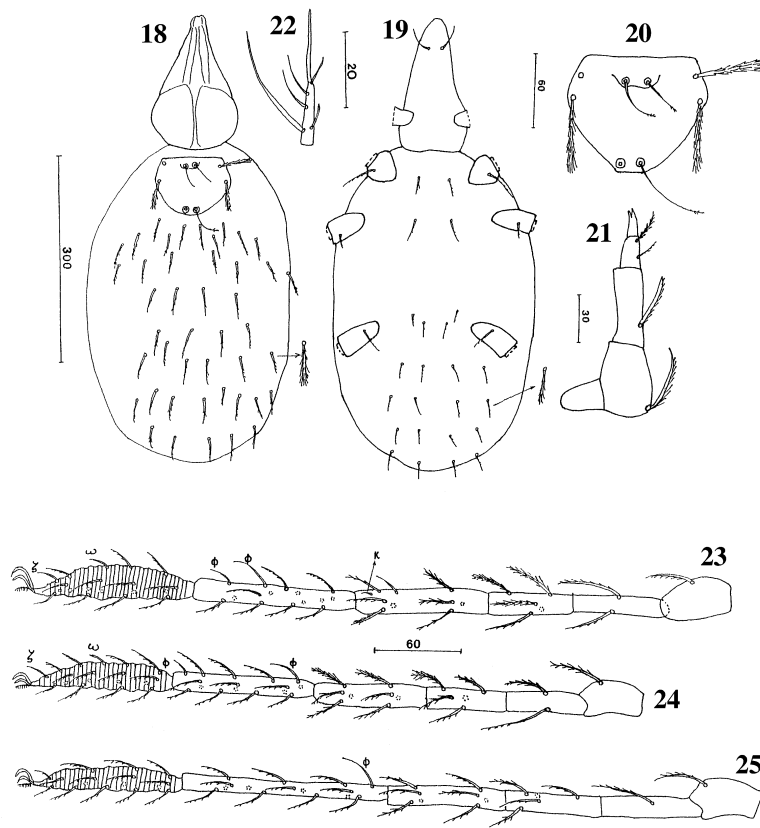
I would like to express my sincere thanks to Dr. A. WOŹNICA (Department of Zoology and Ecology, Agricultural University, Wrocław) for the determination of the Diptera



Figs 1-6. *Dasitrombium margeritanum* sp. n. 1 - idiosoma and gnathosoma, dorsal view, 2 - idiosoma and gnathosoma, ventral view, 3 - palptibia and palptarsus, 4 - leg I, tarsus - trochanter, 5 - leg II, tarsus - trochanter, 6 - leg III, tarsus 9 trochanter.



Figs 7-17. *Leptus tiranicus* sp. n. 7 - idiosoma and gnathosoma, dorsal view, 8 - idiosoma and gnathosoma, ventral view, 9 - scutum, 10 - palp, 11 - palptarsus, 12 - leg I, tarsus - genu, 13 - leg I, telofemur - coxa, 14 - leg II, tarsus - genu, 15 - leg II, telofemur - coxa, 16 - leg III, tarsus - tibia, 17 - leg III, genu - coxa.



Figs 18-25. *Leptus olafi* HAITLINGER 18 - idiosoma and gnathosoma, dorsal view, 19 - idiosoma and gnathosoma, ventral view, 20 - scutum, 21 - palp, 22 - palptarsus, 23 - leg I, tarsus - trochanter, 24 - leg II, tarsus - trochanter, 25 - leg III, tarsus - trochanter.

REFERENCES

- HAITLINGER R. 1987. *Leptus stolae* sp. n. (Acari, Prostigmata, Erythraeidae) from *Stolas nudicollis* (Boh.) (Coleoptera, Chrysomelidae, Cassidinae) from Brazil. *Polskie Pismo Entomologiczne* **57**: 357-359.
- HAITLINGER R. 1991. Six new species of *Leptus* LATREILLE, 1796 (Acari, Prostigmata, Erythraeidae) from Neotropical Region. *Zeszyty Naukowe Akademii Rolniczej we Wrocławiu, Zootechnika* **35** (20): 265-272.

- HAITLINGER R. 2000a. Four new species of *Leptus* LATREILLE, 1796 (Acari: Prostigmata: Erythraeidae) from Central America. *Systematic & Applied Acarology* **5**: 131-142.
- HAITLINGER R. 2000b. Four new species of *Leptus* LATREILLE, 1796 (Acari, Prostigmata, Erythraeidae) from Peru. *Bolletino Museo Regionale di Scienze Naturali di Torino* **17**: 149-162.
- HAITLINGER R. 2000c. A new species of larval *Dasitrombium* ZHANG, 1994 (Acari: Prostigmata: Neothrombiidae) parasitic on grasshoppers from Nicaragua. *Systematic Parasitology* **47**: 65- 67.
- HAITLINGER R. 2004a. Three new species of *Leptus* LATREILLE, 1796 and the first record of *Leptus onnae* Haitlinger, 2000 (Acari: Prostigmata: Erythraeidae) from Brazil. *Systematic & Applied Acarology* **9**: 147-156.
- HAITLINGER R. 2004b. Larval erythraeid mites new to the fauna of Dominican Republic, with a description of *Leptus cabareticus* sp. n. (Acari: Prostigmata: Erythraeidae). *Zeszyty Naukowe Akademii Rolniczej we Wrocławiu, Zootechnika L*, **488**: 125-132.
- KARPINEN E. 1958. Beobachtungen über das Vorkommen vor Arten der familie Erythraeidae (Acari) in Finnland sowie Veränderungen in deren Nomenklatur. *Annales Entomologici Fennici* **24**: 42-45.
- OUDEMANS A. C. 1912. Die bis jetzt bekannten Larven von Thrombidiidae und Erythraeidae mit besonderer Berücksichtigung der für den Menschen schädlichen Arten. *Zoologischer Jahrbücher, Abteilung 1, Supplement* **14**: 1-230.
- SOUTHCOTT R. V. 1992. Revision of the larvae of *Leptus* LATREILLE (Acarina: Erythraeidae) of Europe and North America, with descriptions of post-larval instars. *Zoological Journal of Linnean Society* **105**: 1-153.
- ZHANG Z.-Q. 1994. Neothrombiidae (Acari: Trombidioidea) of the world: systematic review with a phylogenetic analysis and descriptions of two new genera. *Oriental Insects* **28**: 205-237.

Received: February 21, 2006

Accepted: June 19, 2006