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ARTÍCULO:

Four new species of Erythraeidae (Acari: Prostigmata) and the first records of *Charletonia braunsi* (Oudemans, 1910) and *C. brunni* (Oudemans, 1910) from Ethiopia

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Four new species of Erythraeidae (Acari: Prostigmata) and the first records of *Charletonia braunsi* (Oudemans, 1910) and *C. brunni* (Oudemans, 1910) from Ethiopia

Ryszard Haitlinger

Abstract:

Four new species based on larval specimens are described from Ethiopia: *Erythraeus (Zaracarus) jinkaensis* sp. n., *Abrolophus penelopae* sp. n., *Leptus dinekaicus* sp. n. and *L. dalicus* sp. n. *Charletonia braunsi* (Oudemans, 1910) and *C. brunni* (Oudemans, 1910) are reported for the first time from Ethiopia.

Key words: Acari, Prostigmata, Erythraeidae, new species, Ethiopia.
Taxonomy: *Erythraeus (Erythraeus) jinkaensis* sp. n., *Abrolophus penelopae* sp. n., *Leptus dinekaicus* sp. n., *Leptus dalicus*

Cuatro especies nuevas de Erythraeidae (Acari: Prostigmata) y primeras citas de *Charletonia braunsi* (Oudemans, 1910) y *C. brunni* (Oudemans, 1910) para Etiopía

Resumen:

Se describen cuatro especies nuevas encontradas en Etiopia: *Erythraeus (Zaracarus) jinkaensis* sp. n., *Abrolophus penelopae* sp. n., *Leptus dinekaicus* sp. n. y *L. dalicus* sp. n. Se citan por primera vez para Etiopia *Charletonia braunsi* (Oudemans, 1910) y *C. brunni* (Oudemans, 1910).

Palabras clave: Acari, Prostigmata, Erythraeidae, nuevas especies, Ethiopia.
Taxonomia: *Erythraeus (Erythraeus) jinkaensis* sp. n., *Abrolophus penelopae* sp. n., *Leptus dinekaicus* sp. n., *Leptus dalicus* sp. n.

Introduction

No erythraeid mites based on larvae were known hitherto from Ethiopia, only *Abrolophus simplex* Berlese, 1916 and undetermined *Erythraeus* sp. (Lombardini, 1941) based on adults were described from Ethiopia (Berlese, 1916). In this paper four new species from Ethiopia are described based on larval specimens: *Erythraeus (Zaracarus) jinkaensis* sp.n., *Abrolophus penelopae* sp. n., *Leptus dinekaicus* sp. n. and *Leptus dalicus* sp. n.. *Charletonia braunsi* (Oudemans, 1910) and *C. brunni* (Oudemans, 1910) are new to the fauna of Ethiopia.

In the world 14 species of *Erythraeus (Zaracarus)* based on larval instar are known but only one species *E. (Z.) fabiolae* Haitlinger, 1997 was known from Africa (Canary Islands) (Haitlinger. 1997). The genus *Abrolophus* Berlese, 1891 (partly as *Hauptmannia* Oudemans. 1910) is represented in Europe, Asia, North America, New Guinea but from Africa were stated hitherto only two species *A. aitapensis* (Southcott, 1948) from Madagascar and *A. benoni* (Haitlinger, 2002) from Madeira and Canary Islands (La Palma) (Haitlinger, 1986, 2002, 2004b). It is the second record of the genus from Ethiopia. The genus *Leptus* Latreille, 1796 was represented in Africa by 28 species: *L. jocquei* Fain & Elsen, 1987, *L. lovaniensis* Fain & Elsen, 1987, *L. bicristatus* Fain & Elsen 1998, *L . benzaliensis* Fain & Elsen, 1972, *L. carpenteri* Fain & Elsen, 1972, *L. aureliani* Fain & Elsen, 1987, *L. pulyaerti* Fain & Elsen, 1987, *L. polythrix* Fain & Elsen, 1987, *L. similis* Fain & Elsen, 1987, *L. leleupi* Fain & Elsen, 1987, *L. cavernicola* Fain & Elsen, 1987, *L. glossinarum* Fain & Elsen, 1972, *L. maringensis* Fain & Elsen, 1972, *L. rwandae* Fain & Jocque, 1996, *L. sudanensis* Oudemans, 1912, *L. soddagus* Haitlinger, 1990, *L. aldonae* Haitlinger, 1987, *L. maranae* Haitlinger, 1987, *L. ogazulacus* Haitlinger, 1990, *L. aggoratus* Haitlinger, 1990, *L. pasopaicus* Haitlinger, 1990, *L.*

bertoldi Haitlinger, 1993, *L. mogadoranus* Haitlinger, 1990, *L. hammameticus* Haitlinger, 1998, *L. assagasicus* Haitlinger, 2001, *L. hammameticus* Haitlinger, 1998, *L. bogoriacus* Haitlinger, 2001, *L. olamukijacus* Haitlinger, 2001, *L. masaimaraicus* Haitlinger, 2001, *L. madagascariensis* Andre, 1941 and *L. atticolus* Lawrence, 1940 (Oudemans, 1912, Andre, 1941, Lawrence, 1940, Fain & Elsen, 1972, 1987, Haitlinger, 1987b, 1990a,b, 1993, 1998, 2001). In this paper two new species are described from Ethiopia.

Material and methods

Mites were collected in Ethiopia in March 2005. A total 63 larvae were obtained from herbaceous plants and insects (Orthoptera, Coleoptera: Carabidae). The type material is deposited in the Museum of Natural History, Wroclaw University (MNHWU), Wroclaw, Poland. The terminology of structure and setal notation are based on Haitlinger (1999, 2000, 2002). Measurements are given in micrometers (μm) in the Tables I-V.

Systematics

Erythraeidae Robineau-Desvoidy, 1828
Erythraeus Latreille, 1806

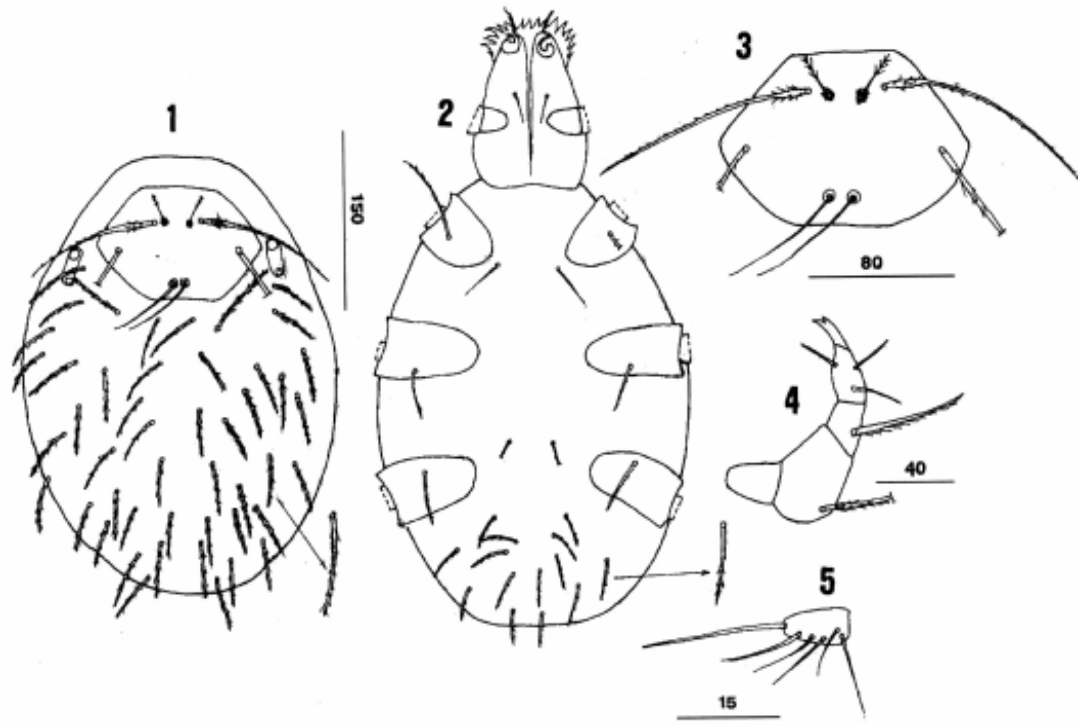
***Erythraeus (Zaracarus) jinkaensis* sp. n.**
Figs 1-11.

DIAGNOSIS: fnBf 3-3-3, fD 47, NDV=61, TiI 144-160, TiIII 212-132, Ip=1948-2154.

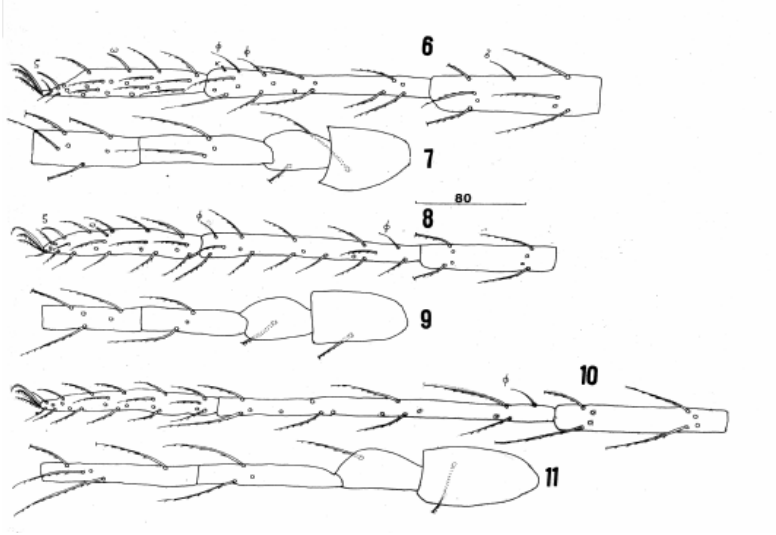
TYPE MATERIAL: Holotype larva (MNHWU, Museum of Natural History, Wroclaw University), Jinka, South Ethiopia, 8.03.2005, from herbaceous plants; leg. R. Haitlinger. Paratype: 1 l, Giorgio n. Konso, 13.03.2005, from herbaceous plants.

ETYMOLOGY: named refering the place where the holotype was collected.

DESCRIPTION BASED ON HOLOTYPE:
Measurements in Table I.
Dorsum with 47 barbed setae. Anterior eye somewhat larger than posterior eye (Fig. 1). Dorsal scutum trapezoidal with posterolateral border rounded. AL>PL, both barbed. Anterior sensillae short with barbs arranged in herring-bone pattern; posterior sensillae nude (Fig. 3).
Ventral surface of idiosoma: sternalae 1a nude; two barbed setae 3a between coxae III. Behind coxae III 14 weakly barbed setae. Coxalae I-III, all weakly barbed, coxala 1b distinctly longer than coxalae II and III (Fig. 2).
Gnathosoma with nude hypostomalae and galealae. Palpfemur and palpgenu each with one seta, both setulose. Palptibia with three nude setae (Fig. 4). Palptarsus bears 6 setae, all nude (Fig. 5).
Leg lengths. I 668 holotype, 638 paratype, II 650, 552, III 846, 758. Ip = 2154, 1948.
Leg setal formula. Leg I. TaI 1ω, 1ζ, 17B, 4N; Ti 2φ, 1κ, 14B; Ge 1σ, 8B; Tf 5B; Bf 3B; Tr 1B; Cx 1B (Figs. 6, 7).
Leg II. Ta 1ω, 1ζ, 18B, 3N; Ti 2φ, 14B; Ge 8B; Tf 5B; Bf 3B; Tr 1B; Cx 1B (Figs. 8, 9).
Leg III. Ta 20B, 2N; Ti 1φ, 14B; Ge 1σ, 8B; Tf 5B; Bf 3B; Tr 1B; Cx 1B (Figs. 10, 11).



Figs. 1-5. *Erythraeus (Zaracarus) jinkaensis* sp. n.: **1**. idiosoma, dorsal view; **2**. idiosoma and gnathosoma, ventral view; **3**. scutum; **4**. palp; **5**. palptarsus.



Figs. 6-11. *Erythraeus (Zaracarus) jinkaensis* sp. n.: **6.** leg I, tarsus - genu; **7.** leg I, telofemur - coxa; **8**. leg II, tarsus - genu; **9.** leg II, telofemur - coxa; **10**. leg III, tarsus - genu; **11.** leg III, telofemur - coxa.

REMARKS: *E. (Z.) jinkaensis* sp. n. belongs to the group species with basifemoral formula 3-3-3. The following species belong to this group: *E. (Z.) fabiolae* Haitlinger 1997 from Canary Islands, *E. (Z.) longipedus* Saboori & Nowzari, 2001, *E. (Z.) rajabii* Saboori, 2000, both from Iran, *E. (Z.) lancifer* Southcott, 1995, from Spain, *E. (Z.) aydinicus* Saboori, Cakmak & Nouri-Gombalani, 2004, from Turkey and *E. (Z.) sibuljinicus* Haitlinger, 2004 from Croatia (Southcott, 1995, Haitlinger, 1997, 2004a, Saboori, 2000, Saboori & Nowzari, 2001, Saboori et al., 2004). The new species differs from *E. (Z.) fabiolae* in shorter L (92-102 vs 116), PW (82-96 vs 124), ISD (50-58 vs 72) and TiIII (212-242 vs 420); from *E. (Z.) longipedus* in shorter AP (34-40 vs 60), AL (122-124 vs 199), TaI (112-116 vs 187) and TiIII (212-242 vs 424); from *E. (Z.) rajabii* in longer W (140-146 vs 127), shorter PW (82-96 vs 102), AP (34-40 vs 52), AL (122-124 vs 192) and TiIII (212-242 vs 375); from *E. (E.) lancifer* in shorter ISD (50-58 vs 60-77), AP (34-40 vs 44-68), TaI (112-116 vs 144-164) and TiIII (212-242 vs 304-355); from *E. (Z.) aydinicus* in shorter ISD (50-58 vs 61-66), AP (34-40 vs 58-70), AL (122-124 vs 165-167), TaI (112-116 vs 177-179) and TiIII (212-242 vs 376-395) and from *E. (Z.) sibuljinicus* in shorter W (140-146 vs 160), PW (82-96 vs 114), AP (34-40 vs 58), TaI (112-116 vs 168) and TiIII (212-242 vs 370).

Key to the species of the subgenus *Zaracarus* with basifemoral formula 3-3-3 of the world

1. TiIII < 280, TaI < 140 .....*E. (Z.) jinkaensis* sp. n.
- TiIII > 300, TaI > 140 ..... 2.
2. TiIII > 400 ……..... 3.
- TiIII < 400 ..... 4.
3. W < 140, ISD 63, PW 109 ..... ……... *E. (Z.) longipedus* Saboori & Nowzari
- W > 140, ISD 72, PW 124.. *E. (Z.) fabiolae* Haitlinger
4. AL < 130 ..... *E. (Z.) sibuljianicus* Haitlinger
- AL > 140 ……..... 5.
5. TiIII < 360 ..... *E. (Z.) lancifer* Southcott
- TiIII > 360 ..... 6.
6. AL > 180, TiI < 260 ..... *E. (Z.) rajabii* Saboori.
- AL < 180, TiI > 260 ..... *E. (Z.) aydinicus* Saboori, Cakmak & Nouri-Gombalani

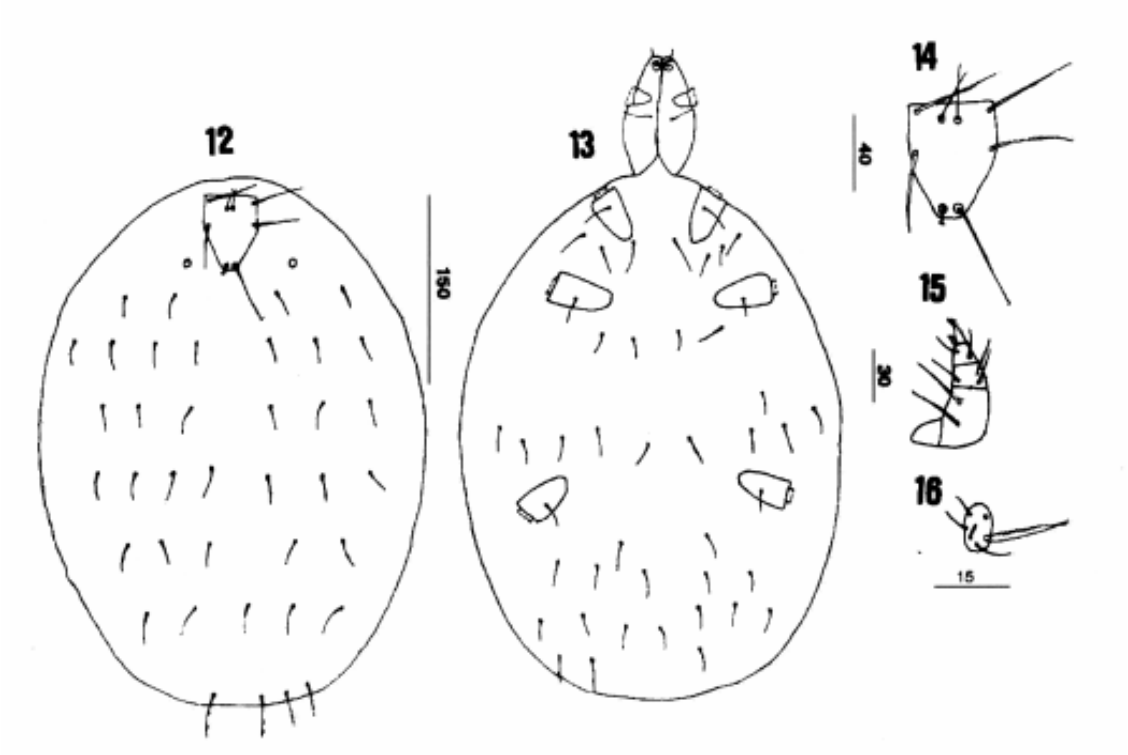
Abrolophus Berlese, 1891
***Abrolophus penelopae* sp. n.**
Figs 12-19.

DIAGNOSIS: fnTr 2-2-1, fnBf 3-?4-3, fn Tf 7-5-5, fn Ge 10-8-8, fnTi 12-12-13, fnTa 16-13-13, fD 38, ISD 42-46, AL 42-46, PL 38-40, TiIII 64-70.

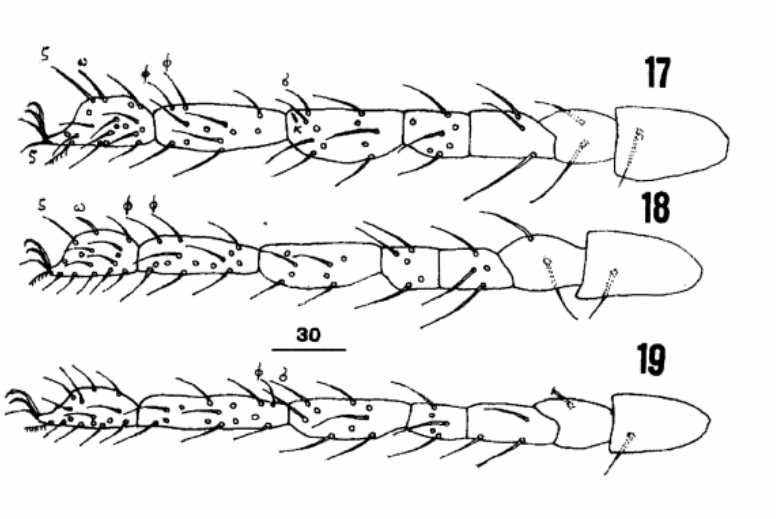
TYPE MATERIAL: holotype larva (MNHWU), Jinka, South Ethiopia, 8.03.2005, from herbaceous plants; leg. R. Haitlinger; paratypes: 2 l, the same data as in holotype.

ETYMOLOGY: The name of the species has been derived from the name Penelopa.

DESCRIPTION BASED ON HOLOTYPE:
Measurements in Table II.
Dorsum with 38 setae; only setae in posterior part of idiosoma are weakly barbed. One eye on each side (Fig. 12). Dorsal scutum longer than wide, with 2 pairs of nude scutalae. Two pairs of sensillary setae, both nude. AM distinctly shorter than S (Fig. 14).
Idiosoma ventrally with setal pair 1a, between coxae I and II 3 pairs of setae, between coxae II and III 14 setae, all these setae are nude. Beyond coxae III 17 setae: some posterior setae are weakly barbed (Fig. 12).
Gnathosoma with nude hypostomalae and galealae. Palpfemur with two setae , palpgenu with 3 setae, palptibia with 2 setae and 1 cone-like seta (i.e. accesory claw); all setae nude (Fig. 15). Palptarsus with 6 setae, one comb-like seta, one solenidion and four short and nude setae (Fig. 16).



Figs. 12-16. *Abrolophus penelopae* sp. n.; **12**. idiosoma, dorsal view; **13.** idiosoma and gnathosoma, ventral view; 14. scutum; **15**. palp; **16.** palptarsus.



Figs. 17-19.
Abrolophus penelopae sp. n.; **17**. leg I; **18**. leg II; **19**. leg III.

Leg lengths: leg I holotype 294, paratypes 282, 276; II 276, 274, 256; III 302, 284, 300. Ip = holotype 872, paratypes 860, 832.
Setal formulae: Leg I: Ta 1ω, 2ζ, 16N, 1B; Ti 2φ, 12N; Ge 1σ, 1κ, 10N; Tf 7N; Bf 3N; Tr 2N; Cx 1N (Fig. 17).
Leg II: Ta 1ω, 1ζ, 13N, 1B; Ti 2φ, 12N; Ge 8N; Tf 5N; Bf 4N; Tr2N; Cx 1N (Fig. 18).
Leg III: Ta 14N, 1B; Ti 1φ, 13N; Ge 1σ, 8N; Tf5N; Bf 3N; Tr 1N (Fig. 19).

REMARKS: *Abrolophus penelopae* sp. n. belongs to the group species with comb-like seta. To this group belong *A. benoni* (Haitlinger, 2002) from Madeira, *A. tonsor* (Southcott, 1996) from Australia, *A. aitapensis* (Southcott, 1948) from New Guinea, Vietnam and Madagascar, *A. bohdani* (Haitlinger, 2003) from Poland, *A. longicollis* (Oudemans, 1910) from Europe, *A. humberti* (Haitlinger, 1996) from Poland, *A. khanjani* (Haitlinger & Saboori, 1996) from Iran, *A. pseudolongicollis* (Haitlinger, 1987) from Poland, Italy, Slovenia and *A. welbourni* Yao, Snider R. J. & Snider R. M., 2000 from USA (Oudemans, 1910, Southcott, 1948, 1996, Haitlinger, 1987a, 1996, 2002, 2003, Haitlinger & Saboori, 1996, Yao et al., 2000). The new species differs from *A. benoni* in shorter L (50-60 vs

64-72), PW (36 vs 46-54), AL (42-46 vs 52-60), PL (38-40 vs 54-60), GL (92-104 vs 120-140), TaI (42-48 vs 60-70) and TiIII (64-70 vs 88-96); from *H. tonsor* in shorter PW (36 vs 50), L (50-60 vs 71), W (42-48 vs 57), AL (42-46 vs 57) and TaI (42-48 vs 59); from *A. aitapensis* in shorter 1a (28-32 vs 32-38), fD (38 vs 47), between coxae II and III 10 setae vs 16 and unciliated sc1; from *A. bohdani* in longer posterior dorsal setae (40-44 vs 42-52), shorter 1a (28-32 vs 32-38), 1b (30-32 vs 38-42), sc1 (20-24 vs 24-32), lack κ on TiI, formula nGe (10,9,8 vs 9,8,8), nTi (11,12,12 vs 12,10,12), length of comb-like seta (17 vs 30), lack of sharp-pointed process in on border at palptibia; from *A. longicollis* in shorter AW (36-40 vs 42-54), AL (42-46 vs 68-84), PL (38-40 vs 56-64), GL (92-104 vs 146-168), TaI (42-48 vs 66-78) and TiIII (64-70 vs 102-126); from *A. humberti* in shorter PW (36 vs 60-70), S (58 vs 90-92), GL (92-104 vs 134-140), TaI (42-48 vs 62-64) and TiIII (64-70 vs 92-104); from *A. khanjani* in shorter PL (38-40 vs 50), 1a (28-32 vs 44), GL (92-104 vs 122), TaI (42-48 vs 58) and TiIII (64-70 vs 90); from *A. pseudolongicollis* in shorter PW (36 vs 52-60), ISD (42-46 vs 50-56), GL (92-104 vs 146-168), TaI (42-48 vs 60-66) and TiIII (64-70 vs 88-100) and from *A. welbourni* in longer S (58 vs 38-47), shorter PL (38-40 vs 55-67), AW (36-40 vs 54-60) and L (50-60 vs 78-88).

Key to the species of the genus *Abrolophus* of the world

1. Cheliceral bases longitudinal striated ..... 2.
- Cheliceral bases not striated ..... 3.
2. Length of posterior dorsal setae < 55, fV 26, TiIII 88-96. ..... *A. benoni* (Haitlinger)
- Length of posterior dorsla setae > 55, fV 17, TiIII 10 ..... *A. tonsor* (Southcott)
3. PL < 43 ..... 4.
- PL > 43 ..... 6.
4. fD 47, fV 20, number of setae between coxae II and III 18, σIII absent ..... *A. aitapensis* (Southcott)
- fD < 44, fV <20, number of setae between coxae II and III 10, σIII present ..... 5.
5. 1a 28-32, 1b 30-32, DS 40-44, sc1 20-24, length of comb-like seta 17 ..... *A. penelopae* n. sp.
- 1a 32-38, 1b 38-42. DS 22-52, sc1 24-32. length of comblike seta 30 ..... *A. bohdani* (Haitlinger)
6. L < 60, PW < 45 .... *A. khanjani* (Haitlinger & Saboori)
- L > 60, PW > 45 ..... 7.
7. iSD > 55 ..... *A. longicollis* (Oudemans)
- ISD < 55 ..... 8.
8. TiIII <86.*A. welbourni* Yao, Snider RJ. & Snider RM.
- TiIII > 86 ..... 9.
9. AL > 66 ..... *A. humberti* (Haitlinger)
- AL < 66 ..... *A. pseudolongicollis* (Haitlinger)

Leptus Latreille, 1796

***Leptus dinekaicus* sp. n.**

Figs 20-26.

DIAGNOSIS: two palpgenualae, 4 intercoxalae, fD ~85, fV 30, NDV ~115, ISD 34-46, AW 58-60, TaI 84-94, TiIII 110-122.

TYPE MATERIAL: holotype larva (MNHWU); Dineka n. Turmi, South Ethiopia, 12.03.2005, from herbaceous plants; leg. R. Haitlinger; paratypes: 14 l, the same data as in holotype.

ETYMOLOGY: named refering the place where the holotype was collected.

DESCRIPTION BASED ON HOLOTYPE:

Measurements in Table III.

Dorsum with 85 distinctly barbed setae. Posterior setae somewhat longer than other ones. One eye on each side (fig. 20). Dorsal scutum longer than wide, with 2 pairs of barbed scutalae; AL and PL subequal in length. Two pairs of sensillary setae, both ciliated on their 1/2 length, AM<S (Fig. 20).

Idiosoma ventrally with barbed setal pair 1a, between coxae II setal pair 2a and between coxae II-III four setal pairs 3a, all barbed. Beyond coxae III 30 barbed setae. Coxalae 1b, 2b and 3b, all barbed (Fig. 21).

Gnathosoma with nude hypostomalae. Palpfemur with one barbed seta, palpgenu with two barbed setae, palptibia with two barbed setae (Fig. 22). Palptarsus with ?5 nude setae (Fig. 23). Leg lengths: leg I holotype 424, paratypes 472, 436, 448. leg II 426, 440, 422, 466, leg III 460, 516, 494, 510. Ip = 1310, 1388, 1362, 1424.

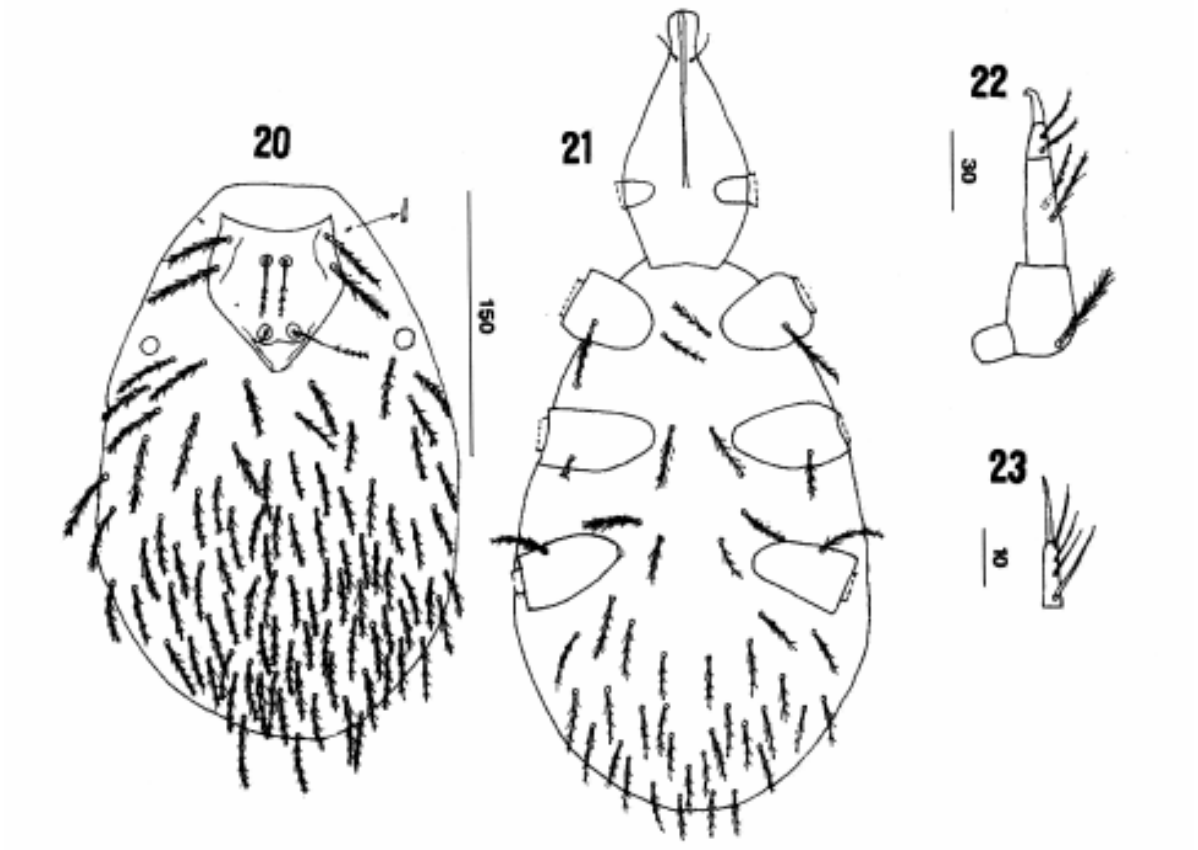
Setal formulae: Leg I: Ta 1ω, 1ζ, 14B; Ti 2φ, 1κ, 14B; Ge 1σ, 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Fig. 24).
Leg II: Ta 1ω, 1ζ, 15B; Ti 2φ, 14B; Ge 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Fig. 25).
Leg III: Ta 16B, 2N; Ti 1φ, 14B; Ge 8B; Tf 5B; Bf 1B; Tr 1B; Cx 1B (Fig. 26).

REMARKS: *Leptus dinekaicus* sp. n. belongs to the group species of *Leptus* bearing two setae on the palpgenu and four setae between coxae II and III. In the world 15 species were known with such a feature: *L. lomani* (Oudemans, 1912) from Chile, *L. hringuri* Haitlinger, 2000 from Peru, *L. iguacuicus* Haitlinger, 2004 from Brazil, *L. anomalus* Southcott, 1946, *L. charon* Southcott, 1991, *L. faini* Southcott, 1993, *L. utheri* Southcott, 1993, *L. halli* Southcott, 1993, *L. truncatus* Southcott, 1993, *L. fortei* Southcott, 1991, *L. waldockae* Fain, 1991 all from Australia, *L. fathipeuri* Haitlinger & Saboori, 1996 from Iran, *L. benzaliensis* Fain & Elsen, 1972 from Kinshasa Coingo (Zaire) and *L. aggoratus* Haitlinger, 1990 from Zambia (Oudemans, 1912, Southcott, 1946, 1991, 1993, Fain & Elsen, 1972, Fain, 1991, Haitlinger, 1990a, 2000, 2004c, Haitlinger & Saboori, 1996). *L. dinekaicus* sp. n. differs from *L. lomani* in AL and PL both placed on scutum, in *L. lomani* PL are beyond scutum; from *L. hringuri* by shorter L (84-92 vs 124-126), AL (40-44 vs 84-86), ISD (34-46 vs 80), GL (146-152 vs 260-264) and TiIII (110-122 vs 236); from *L. iguacuicus* in shorter W (78-82 vs 90), AW (58-60 vs 68), TaI (84-94 vs 110) and TiIII (110-122 vs 164); from *L. anomalus* by shorter AW (58-60 vs 65-73), TaI (84-94 vs 94-104), TiI (90-98 vs 124-133), longer AL (40-44 vs 28-40) and PL (40-52 vs 25-36); from *L. charon*, *L. faini*, *L. truncatus*, *L. fortei*, *L.*

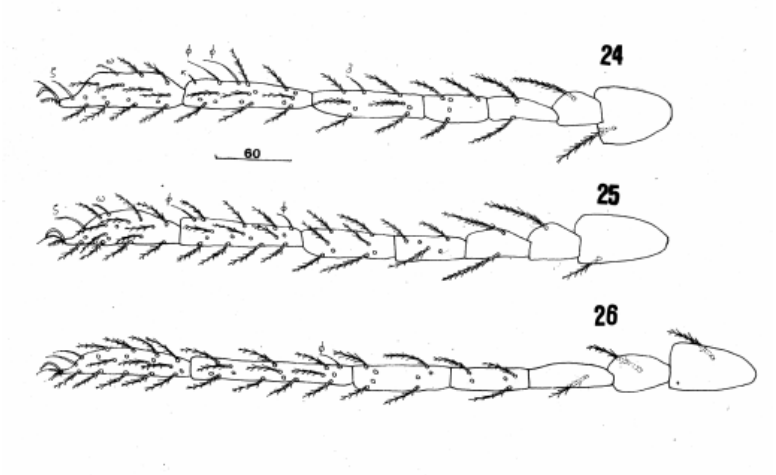
bezaliensis and *L. aggoratus* by shorter AW (58-60 vs 86-98, 91-100, 93, 95-97, 123-130, 100, respectively), W (78-82 vs 108-109, 120-127, 119, 122-125, 119, 134, respectively); from *L. utheri* by shape of dorsal setae (in *L. utheri* leafe-shaped), shorter AW (58-60 vs 82) and TaI (84-94 vs 120), from *L. fathipeuri* by shorter TaI (84-84 vs 112), TiI (90-98 vs 146), TiIII (110-122 vs 180) and fD (85 vs 60); from *L. waldockae* by longer L (84-92 vs 57-63), PL (40-52 vs 28-34) and shorter AW (58-60 vs 70-75) and from *L. halli* by shape of dorsal setae (in *L. halli* leafe-shaped), shorter AW (58-60 vs 71-87), W (78-82 vs 91-100) and TaI (84-94 vs 104-111).

Key to the species of the genus *Leptus* having 2 setae on palpgenu and 4 setae between coxae II and III of the world

1. Posterior lateral scutal setae (PL) off scutum ..... *L. lomani* (Oudemans)
- Posterior lateral scutal setae (PL) on scutum ..... 2.
2. TiI > 180 ..... 3.
- TiI < 180 ..... 5.
3. AL > 80, W > 135, TiI 186-196 ..... ……..……*L. hringuri* Haitlinger
- AL < 80, W < 135, TiI < 178 or > 200 ..... 4.
4. TiI > 230, TaI > 170, L > 110 ..... ……..…….. *L. benzaliensis* Fain & Elsen
- TiI < 230, TaI < 170, L < 110 ..... *L. faini* Southcott
5. L < 80 ..... 6.
- L > 80 ..... 9.
6. TiI < 122 ..... *L. waldockae* Fain
- TiI > 122 7
7 AL 28-40, TiIII < 174, TiI < 135 ..... ……..…….. *L. anomalus* Southcott
- AL > 40, TiIII > 174, TiI > 135 ..... 8.
8. W > 120 ..... *L. aggoratus* Haitlinger
- W < 120 ..... *L. fathipeuri* Haitlinger & Saboori
9. TiI < 110 ..... *L. dinekaicus* n. sp.
- TiI > 114 ..... 10.
10. TiIII > 175 ……..... *L. charon* Southcott
- TiIII < 175 ..... 11.
11. TaI > 128, AW > 88, AL > 54 ..... *L. fortei* Southcott
- TaI < 128, AW < 88, AL < 54 ..... 12.
12. Dorsal idiosomalae leaflike ..... 13.
- Dorsal idiosomalae not leaflike ..... 14.
13. Coxalae I rounded ended ..... *L. utheri* Southcott
- Coxalae I pointed ..... *L. halli* Southcott
14. fD < 95, fV > 36, W < 100 ... *L. iguacuicus* Haitlinger
- fD > 95, fV < 36, W > 100 ….. *L. truncatus* Southcott



Figs. 20-23. *Leptus dinekaicus* sp. n.; **20**. idiosoma, dorsal view; **21**. idiosoma and gnathosoma, ventral view; **22**. palp; **23**. palptarsus



Figs. 24-26. *Leptus dinekaicus* sp. n.; **24**. leg I; **25**. leg II; **26**. leg III.

***Leptus dalicus* sp. n.**
Figs. 27-37.

DIAGNOSIS: one palpgenuala, one palpfemorala, four intercoxalae, fD 46, fV 30, NDV 76, ISD 80, AW 106, TaI 188, TiIII 314.

TYPE MATERIAL: holotype larva (MNHWU); Dali, Ethiopia, 7.03.2005, from undetermined small Carabidae; leg. R. Haitlinger.

ETYMOLOGY: named refering the place where the holotype was collected.

DESCRIPTION BASED ON HOLOTYPE:
Measurements in Table IV.
Dorsum with 46 barbed setae. One eye on each side (Fig. 27). Dorsal scutum somewhat longer than wide, its anterior border concave. It bears 2 pairs of barbed setae (AL broken) and two pairs of sensillary setae (both broken) (Fig. 29).
Idiosoma ventrally with setal pair 1a, 2a and four setae 3a, all barbed. Beyond coxae III 30 barbed setae (Fig. 28). Coxalae 1b, 2b, 3b all barbed; coxalae 1b distinctly longer than 2b and 3b. Gnathosoma with nude hypostomalae. Palpfemur with one barbed seta, palpgenu with one barbed seta and palptibia with two barbed setae (Fig. 30). Palptarsus with 6 setae (two
are broken) (Fig. 31). Leg lengths: I 1030, II 964, III 1112. Ip = 3106.
Leg setal formula: Leg I: Ta 1ω, 2ζ, 21B; Ti 2φ, 1κ, 15B; Ge 1σ, 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Figs. 32, 33).
Leg II: Ta 1ω, 2ζ, 21B; Ti 2φ, 14B; Ge 1σ, 8B; Tf 5B; Bf 2B; Tr 1B; Cx 1B (Figs. 34, 35).
Leg III: Ta 19B, 2N; Ti 1φ, 15B; Ge 1σ, 8B; Tf 4B; Bf 1B; Tr 1B; Cx 1B (Figs. 36, 37).

REMARKS: *Leptus dalicus* sp. n. belongs to the group species with four setae between coxae II and III, with one palpgenuala, TiIII 290- 330 μm long and PL 70-90 μm long. To this group are including also species that only extremal dimensions (minimal or maximal) of TiIII and PL are in mentioned range. The following species belong to this group: *L. jocquei* Fain & Elsen, 1987, *L. bicristatus* Fain & Elsen, 1987 both from Malawi, *L. lovaniensis* Fain & Elsen, 1987, *L. carpenteri* Fain & Elsen, 1972, *L. benzaliensis* Fain & Elsen 1972, all from Democratic Republic of Congo (Zaire), *L. alkmenae* Haitlinger, 1998 from India, *L. admeti* Haitlinger, 1998 from Indonesia, *L. hidakai* Kawashima, 1958, from Japan and Singapore, *L. dolichopodos* Zheng 1996 from China, *L. zhangi* Saboori & Atamehr, 1999 from Iran, *L. indianensis* Fain, Gummer & Whitaker, 1987, *L. welbourni* Southcott, 1992, *L. calix* Southcott, 1992, all from USA, *L. torresianus* Southcott, 1993, *L. alopecurus* Southcott, 1991, *L. lorarius* Southcott, 1997, all from Australia and *L. cheesmanae* Southcott, 1999, from Papua New Guinea (Kawashima, 1958, Fain & Elsen, 1972, 1987, Fain, Gummer & Whitaker, 1987, Southcott, 1991, 1992, 1993, 1999, Haitlinger, 1998, Baker & Selden, 1997, Saboori & Atamehr, 1999).

The new species differs from *L. jocquei* in shorter 1b (54 vs 73), 3b (38 vs 60), ISD (80 vs 93-99), DS (54-62 vs 58-88), not enlarged dorsal setae and shape of scutum; from *L. lovaniensis* in longer L (144 vs 120), W (138 vs 125), AW (106 vs 96), PW (134 vs 118) and shorter TiI (254 vs 293); from *L. bicristatus* in longer PW (134 vs 120), TaI (184 vs 154) and TiI (254 vs 219); from *L. carpenteri* in longer L (144 vs 125), W (138 vs 115), AW (106 vs 86) and PW (134 vs 108); from *L. benzaliensis* in longer L (144 vs 123), W (138 vs 119), AW (106 vs 93) and PW (134 vs 110); from *L. alkmenae* in longer W (138 vs 122), AW (106 vs 92), PW (134 vs 104), GL (266 vs 206) and TiI (254 vs 210); from *L. admeti* in longer L (144 vs 110), AP (32 vs 22), in TiII solenoidala φ placed on its proximal and distal part and lack κ vs both φ placed in distal part and κ is present; from *L. hidakai* in longer AW (106 vs 77), PW (134 vs 85), L (144 vs 108), W (138 vs 99) and ISD (80 vs 64); from *L. zhangi* in longer L (144 vs 99), W (138 vs 99), AW (106 vs 82), AP (32 vs 16) and ISD (80 vs 55); from *L. indianensis* in longer AW (106 vs 78-87), L (144 vs 96-111), W (138 vs 102-111) and TaI (188 vs 168); from *L. welbourni* in longer AW (106 vs 82-86), PW (134 vs 96-100), L (144 vs 125-127) and fD (46 vs 62); from *L. calix* in longer AW (106 vs 95-98), L (144 vs 112-116) and fD (46 vs 94); from *L. torresianus* in shape of scutum, longer ISD (80 vs 39-70), L (144 vs 73-98) and AP (32 vs 16-19); from *L. alopecurus* in longer L (144 vs 104), W (138 vs 104), ISD (80 vs 48), AP (32 vs 11) and Ip (3106 vs 2955); from *L. lorarius* in longer PW

(134 vs 107-114), ISD (80 vs 53-57), L (144 vs 94-98), AP (32 vs 16-18) and shorter TaI (188 vs 225-232) and from *L. cheesmanae* in longer L (144 vs 109-113), AP (32 vs 22-23) and not fusi form setae 2a and intercoxalae.

Key to the species of *Leptus* with 4 setea between coxae II and III, 1 palpgenuala, TiIII 290-330 and PL 70-90.

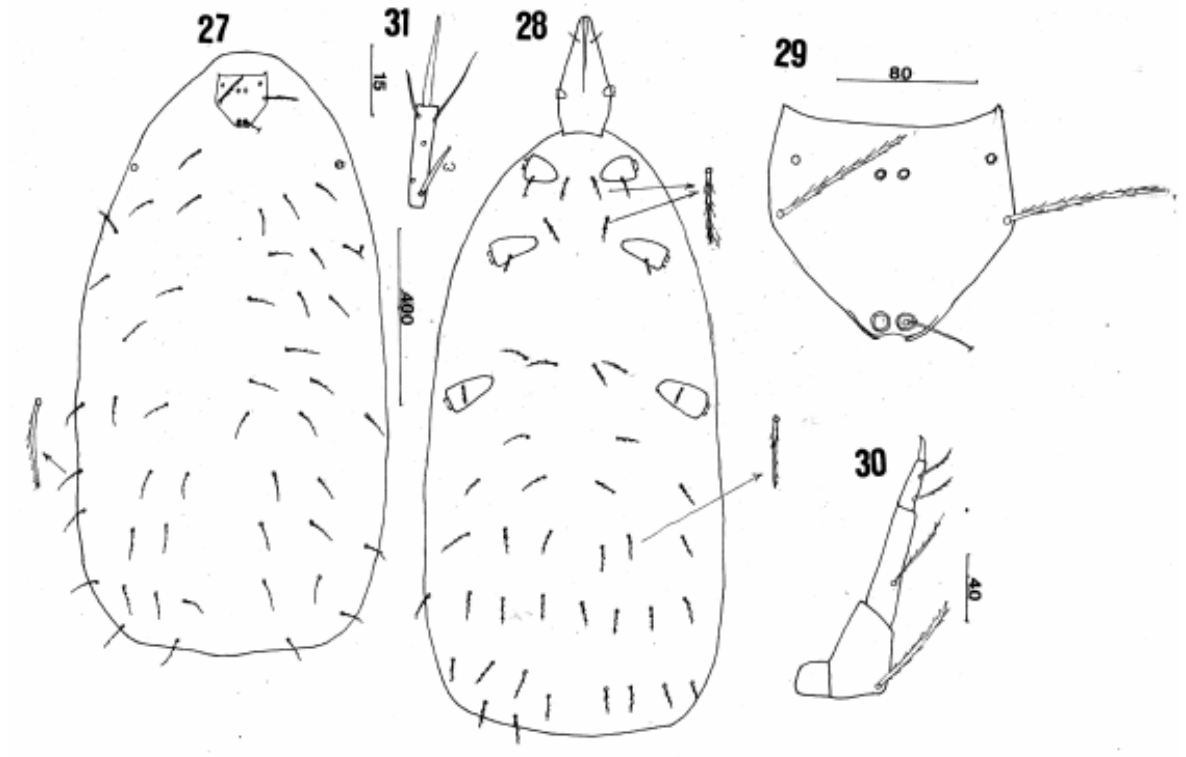
1. ISD > 92 ..... *L. jocquei* Fain & Elsen
- ISD < 92 ..... 2.
2. ISD 86-91 ... *L. indianensis* Fain, Gummer & Whitaker
- ISD < 86 ..... 3.
3. L > 136 ..... *L. dalicus* n. sp.
- L < 136 ..... 4.
4. TIIII > 370 ..... *L. lorarius* Southcott
- TiIII < 370 5
5. W < 110 ..... 6.
- W > 110 ..... 9.
6. TaI < 170 ..... *L. alopecurus* Southcott
- TaI > 170 ..... 7.
7. L > 116 ..... *L. welbourni* Southcott
- L < 116 ..... 8.
8. ISD 64, PW 85, L 108 ..... *L. hidakai* Kawashima
- ISD 55, PW 94, L 99 .. *L. zhangi* Saboori & Atamehr
9. W > 138, PW > 126 ..... *L. admeti* Haitlinger
- W < 138, PW < 126 ..... 10.
10. L < 100 ..... *L. torresianus* Southcott
- L > 100 ..... 11.
11. TaI < 170 ..... 12.
- TaI > 170 ..... 13.
12. PW 120, AW 103 …… *L. bicristatus* Fain & Elsen
- PW 104, AW 92 ..... *L. alkmenae* Haitlinger
13. TiI > 287 ..... *L. lovaniensis* Fain & Elsen
- TiI < 287 ..... 14.
14. fD > 84 ..... *L. calix* Southcott
- fD < 84 ..... 15.
15. fV > 40, fD > 64 ..... *L. benzaliensis* Fain & Elsen
- fV < 40, fD < 64..... 16.
16. L < 115, fD 44, fV 24 ..... *L. cheesmanae* Southcott
- L > 115, fD 51, fV 30 ..... *L. carpenteri* Fain & Elsen

Charletonia Oudemans, 1910

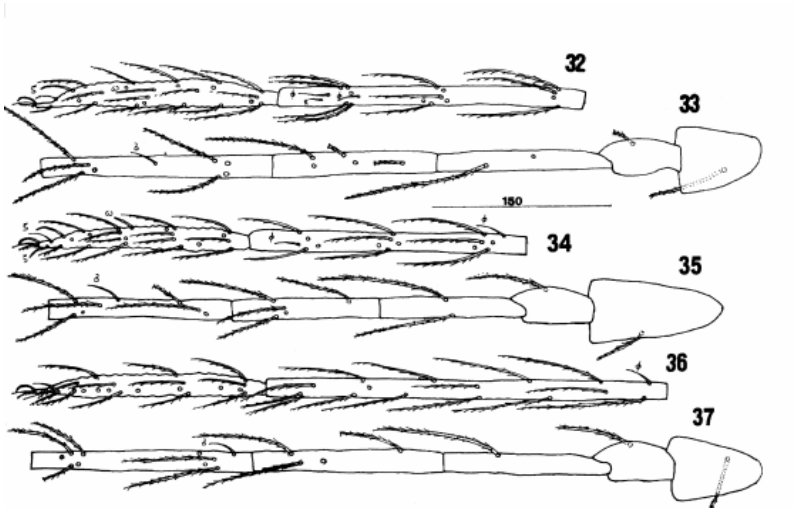
***Charletonia braunsi* (Oudemans, 1910)**

MATERIAL: 7 l, 8.03.2005, Arba Match, Ethiopia; 1 l, 8.03.2005, Chencha, altitude ~2500 m; 8 l, 11.03.2005, Turmi; 13 l, 13.03.2005, Giorgio n. Konso; 1 l, 22.03.2005, ~20 km to north from Bihar Dar, Blue Nil Falls; all specimens collected from small Acrididae (Orthoptera).

This species was known only from Guinea (Oudemans, 1910, Southcott, 1966). Common species in Ethiopia, associated with small Acrididae. First record from Ethiopia.



Figs. 27-31. *Leptus dalicus* sp. n.; **27**. idiosoma, dorsal view; **28**. idiosoma and gnathosoma, ventral view; **29**. idiosoma; **30**. palp; **31**. palptarsus.



32-37. *Leptus dalicus* sp. n.; **32**. leg I, tarsus - tibia; **33.** leg I, genu - coxa; **34**. leg II, tarsus - tibia; **35.** leg II, genu - coxa; **36**, leg III, tarsus - tibia; **37**. leg III, genu - coxa.

***Charletonia brunni* (Oudemans, 1910)**

MATERIAL: 12 l, 13.03.2005, Giorgio n. Konso, South Ethiopia, from large undetermined Pyrgomorphidae (Orthoptera).

This species was known from Benin (Oudemans, 1910, Southcott, 1966). Probably it is a common species in South Ethiopia, associated mainly with large Pyrgomorphidae. First record from Ethiopia.

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Table I.

Metric data (in μm) for *Erythraeus (Zaracarus) jinkaensis* sp. n.; H - holotype, P - paratype

	H	P		H	P
IL	368	301	PsGd	62	70
IW	260	254	TaI	116	112
AW	40	40	TiI	160	144
PW	96	82	GeI	120	110
AA	18	20	TfI	76	68
SB	16	12	BfI	94	84
ISD	50	58	TrI	44	50
L	92	102	CxI	58	70
W	140	146	TaII	108	100
AP	34	40	TiII	154	124
AL	124	122	GeII	100	86
PL	60	60	TfII	74	64
AM	30	32	BfII	78	60
S	60	60	TrII	50	42
DS	44-74	40-52	CxII	76	76
Oc	42	50	TaIII	130	128
GL	124	148	TiIII	242	212
1a	32	30	GeIII	122	112
sc1	20	-	TfIII	112	92
1b	88	84	BfIII	104	84
2b	36	38	TrIII	54	46
3b	48	36	CxIII	82	84
PsFd	-	44			

Table II.

Metric data (in μm) for *Abrolophus penelopae* sp. n.; H - holotype, P - paratypes

	H	P	P		H	P	P
IL	419	305	336	PsFd	34	32	28
IW	305	210	235	TaI	48	46	42
AW	40	36	36	TiI	54	58	58
PW	36	36	36	GeI	46	50	46
AA	12	10	12	TfI	28	28	28
SB	10	10	8	BfI	36	30	34
ISD	44	46	42	TrI	32	26	24
L	58	56	60	CxI	50	44	44
W	48	44	42	TaII	42	40	40
AP	18	22	18	TiII	56	50	44
AL	42	46	-	GeII	48	46	42
PL	38	40	-	TfII	24	26	24
AM	28	32	-	BfII	32	30	28
S	-	58	-	TrII	30	28	24
DS	32-44	34-42	30-40	CxII	44	54	54
GL	98	104	92	TaIII	38	40	40
1a	28	32	28	TiIII	70	64	64
2a	-	20	-	GeIII	54	52	54
sc1	20	20	24	TfIII	30	28	26
1b	-	30	32	BfIII	40	26	32
2b	26	20	24	TrIII	28	28	32
4b	26	30	24	CxIII	42	46	52

Table III.

Metric data (in μm) for *Leptus dinekaicus* sp. n.; H - holotype, P - paratypes (n=10),

	H	P		H	P
IL	397	413-666	PsFd	38	40-46
IW	203	273-476	TaI	84	90-94
AW	60	58-60	TiI	92	90-98
PW	76	72-74	GeI	72	74-80
AA	10	8-10	TfI	46	48-52
SB	16	12-14	BfI	46	46-60
ISD	40	34-46	TrI	36	32-40
L	86	84-92	CxI	48	48-52
W	78	80-82	TaII	80	84-88
AP	14	14-16	TiII	86	76-90
AL	40	40-44	GeII	64	70-72
PL	46	40-52	TfII	46	46-52
AM	36	30-38	BfII	46	44-54
S	58	44-58	TrII	38	36-44
DS	32-44	30-50	CxII	66	64-72
GL	148	146-152	TaIII	84	90-92
1a	28	28-34	TiIII	116	110-122
2a	34	32-34	GeIII	66	70-78
sc1	18	20	TfIII	56	56-58
1b	52	52-56	BfIII	60	54-62
2b	32	26-32	TrIII	38	42-46
3b	38	32-34	CxIII	60	62
PsGd*	22	30	PsGd**	34	40

* proximal seta, ** distal seta

Table IV.

Metric data (μm) for *Leptus dalicus* sp. n.

IL	1206	PsGd	70
IW	654	PsFd	80
AW	106	TaI	188
PW	134	TiI	254
AA	14	GeI	180
SB	16	TfI	130
ISD	80	BfI	132
L	144	TrI	64
W	138	CxI	82
AP	32	TaII	162
AL	-	TiII	222
PL	82	GeII	144
AM	-	TfII	100
S	-	BfII	110
DS	54-62	TrII	64
GL	266	CxII	104
1a	54	TaIII	190
2a	44	TiIII	314
sc1	40	GeIII	168
1b	54	TfIII	150
2b	38	BfIII	136
3b	38	TrIII	70
		CxIII	94

Table V.

Metric data (in μm) for (1) *Charletonia braunsi* (Oudemans) from Ethiopia* (n=10), Guinea** (after Oudemans, 1912 and Southcott, 1966) and (2)*C. brunni* (Oudemans) (n=10).

	1*	1**	2		1*	1**	2
IL	488-1060		679-1206	3b'	36-42		62-74
IW	292-678		425-907	3b''	32-42		54-64
AW	70-84	73-84	92-102	TaI	108-126	105	184-208
MW	66-82	68-78	100-118	TiI	88-104	104	244-268
PW	88-104	74-102	116-136	GeI	80-94	87	180-206
L	84-100	76-95	120-130	TfI	50-52		104=112
W	96-114	100-108	122-144	BfI	56-68		116-134
ISD	46-60	49-57	64-76	TrI	40-52		66-70
AL	44-56	41-49	76-86	CxI	46-62		82-90
ML	38-54	38-47	72-80	TaII	96-110		164-194
PL	36-54	37-45	64-72	TiII	82-90		204-230
AM	38-44	40-60	62-64	GeII	74-82		154-172
S	74-76	79-91	78-92	TfII	38-44		92-104
AP	30-40	33-40	52-60	BfII	52-56		104-124
AA	8-10	8-9	10-14	TrII	36-52		60-64
SB	16-18	13-19	22-24	CxII	64-70		80-94
LX	10-12		14-20	TaIII	104-122	106	184-210
AAS	36-44		44-48	TiIII	116-134	127	310-332
DS	28-50	24-50	36-62	GeIII	80-92	88	172-194
GL	122-128		164-188	TfIII	48-56		132-148
1a	28-32	40	42-50	BfIII	56-62		120-132
2a	34-42		52-64	TrIII	46-58		62-76
sc1	22-30		38-52	CxIII	54-70		96-102
1b	46-68	65	92-110	fD	~82-88		
2b'	44-54	48	72-100	fV	~34-36		
2b''	34-44	38	60-70	PsFd	44-52		90
				PsGd	26-32		42