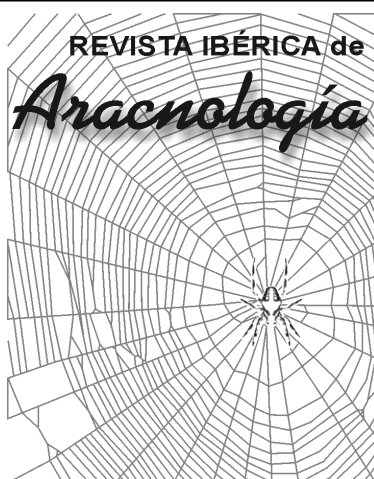




ARTÍCULO:

Nine new species and new records of mites (Acari: Astigmata: Heterocoptidae) from tropical Africa

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ARTÍCULO:

Nine new species and new records of mites (Acari: Astigmata: Heterocoptidae) from tropical Africa

Ryszard Haitlinger

Abstract:

Nine new species are described: *Kamerucoptes libengicus* sp. n. from the Democratic Republic of Congo and Cameroon from the hosts *Aspidomorpha togata* Thomson, 1858 and *Chiridopsis aequinoctialis* (Olivier, 1808), *K. tanzanicus* sp. n. from Tanzania and from the host *A. ingens* Duvivier, 1891, *K. cameroonicus* sp. n. from Cameroon and from the host *A. chlorotica* (Olivier, 1808), *K. barombicus* sp. n. from Cameroon and from the host *Cassida inaequalis* Thomson, 1858, *K. hilaryi* sp. n. from Tanzania and from the host *A. submutata* Weise, 1899, *K. nigericus* sp. n. from Nigeria and from the host *A. fenestrata* (Olivier, 1808), *K. leopoldi* sp. n. from Cameroon and from the host *Aethiopocassis kraatzi* (Weise, 1898), *K. guineus* sp. n. from Guinea and from the host *Aspidomorpha isparetta* Boheman, 1854 and *K. bazylii* sp. n. from Tanzania and from the host *Conchyloctenia punctata* (Fabricius, 1787). *K. tsaratananaicus* Haitlinger, 2002 is reported for the first time from the Republic of South Africa and from new hosts, *K. sibuticus* Haitlinger, 2002 is reported for the first time from the Democratic Republic of Congo, *Erotolocoptes helenae* Haitlinger, 1996 is reported for the first time from Tanzania and *E. verenae* Haitlinger, 1996 is reported for the first time from Gabon and the Republic of South Africa.

Key words: Acari, Astigmata, Heterocoptidae, new species, new records, new hosts, Africa.

Taxonomy: *Kamerucoptes libengicus* sp. n., *Kamerucoptes tanzanicus* sp. n., *Kamerucoptes cameroonicus* sp. n., *Kamerucoptes barombicus* sp. n., *Kamerucoptes hilaryi* sp. n., *Kamerucoptes nigericus* sp. n., *Kamerucoptes leopoldi* sp. n., *Kamerucoptes guineus* sp. n., *Kamerucoptes bazylii* sp. n.

Nueve nuevas especies y nuevas citas de ácaros (Acari: Astigmata: Heterocoptidae) para el África tropical

Resumen:

Se describen nueve nuevas especies: *Kamerucoptes libengicus* sp. n. de la República Democrática del Congo y Camerún sobre los hospedantes *Aspidomorpha togata* Thomson, 1858 y *Chiridopsis aequinoctialis* (Olivier, 1808), *K. tanzanicus* sp. n. de Tanzania sobre *A. ingens* Duvivier, 1891, *K. cameroonicus* sp. n. de Camerún sobre *A. chlorotica* (Olivier, 1808), *K. barombicus* sp. n. de Camerún sobre *Cassida inaequalis* Thomson, 1858, *K. hilaryi* sp. n. de Tanzania sobre *A. submutata* Weise, 1899, *K. nigericus* sp. n. de Nigeria sobre *A. fenestrata* (Olivier, 1808), *K. leopoldi* sp. n. de Camerún sobre *Aethiopocassis kraatzi* (Weise, 1898), *K. guineus* sp. n. de Guinea sobre *Aspidomorpha isparetta* Boheman, 1854 y *K. bazylii* sp. n. de Tanzania sobre *Conchyloctenia punctata* (Fabricius, 1787). *K. tsaratananaicus* Haitlinger 2002 se cita por primera vez de la República de Sudáfrica y de nuevos hospedantes, *K. sibuticus* Haitlinger 2002 se cita por primera vez de la República Democrática del Congo, *Erotolocoptes helenae* Haitlinger, 1996 se cita por primera vez de Tanzania y *E. verenae* Haitlinger, 1996 se cita por primera vez de Gabón y de la República de Sudáfrica.

Palabras clave: Acari, Astigmata, Heterocoptidae, nuevas especies, nuevas citas, nuevos hospedantes, África.

Taxonomía: *Kamerucoptes libengicus* sp. n., *Kamerucoptes tanzanicus* sp. n., *Kamerucoptes cameroonicus* sp. n., *Kamerucoptes barombicus* sp. n., *Kamerucoptes hilaryi* sp. n., *Kamerucoptes nigericus* sp. n., *Kamerucoptes leopoldi* sp. n., *Kamerucoptes guineus* sp. n., *Kamerucoptes bazylii* sp. n.

Introduction

The knowledge of the family Heterocoptidae is still very scarce. Up to now, only 13 species belonging to 4 genera are known for Africa (Fain, 1987, Haitlinger, 1996, 2002). In this paper nine new species are described and new records and new hosts for some species are given.

Material and Methods

Mites were collected from beetles housed in the private collection of Prof. Dr. L. Borowiec (MNHUWU). All measurements are given in μm . Holotypes are deposited in the Museum of Natural History, Wrocław University (MNHUWU).

Abbreviations used in the text: IL – length of idiosoma, IW – width of idiosoma, G – length of genital apparatus, vi – length of apical setae, ϕ I-IV – length of tibial solenidia, σ I-III – length of genual solenidia, ads – distance between adanal suckers measured between ventral border of the suckers, WTal and WTalIV – width of tarsus I and tarsus IV, WTiIV – width of tibia IV.

Results

Taxonomy

Family: Heterocoptidae Fain, 1967

Genus: *Kamarucoptes* Haitlinger, 2002

***Kamarucoptes libengicus* sp. n.**

Figs 1-13

TYPE MATERIAL. Male holotype (MNHUWU), Libenge Distr., Democratic Republic of Congo (Zaire), 15.10.1947, from *Aspidomorpha togata* Thomson, 1858; leg. R. Cremer & M. Neuman. Paratypes: 1♂, 2♀♀, same data as holotype, 1♂, Mpese, Democratic Republic of Congo, 21.06.1937, from *Chiridopsis aequinoctialis* (Olivier, 1808), leg. R. Cooreman; 4♂♂, 2♀♀, Lisala, Democratic Republic of Congo, 29.08.1947, from *A. togata*, leg. R. Cremer and M. Neuman IX, 1924; 2♂♂, 1♀, Sanga River, Cameroon, from *A. togata*.

ETYMOLOGY. Named after the name of the district where the holotype was collected.

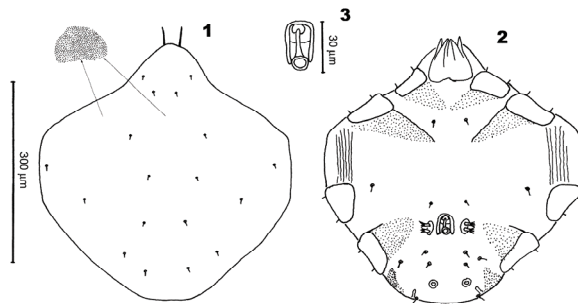
DIAGNOSIS. Tal 70-80, TalIV 72-84, ϕ I 174-192, ϕ IV 186-224, σ I 36-44, WTiIV 50-60, posterior margin of idiosoma rounded.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table I. *Idiosoma* somewhat longer than wide. Posterior margin of idiosoma rounded. Dorsum punctate, with 9 pairs of minute setae and relatively long setae vi. Opisthosoma short (Fig. 1). *Idiosoma* ventrally with epimera II and IV. A pair of setae 1a anterior to epimera II; between epimera II and genital apparatus 2 pairs of setae. There are 4 pairs of setae posterior to genital apparatus. Genital apparatus short (Fig. 3). Adanal suckers placed not far from posterior margin of idiosoma, ads short. Anus placed between adanal suckers (Fig. 2). *Tarsi* I-IV subequal in length (Table I, Figs 4-7); tarsi IV thicker than others (Fig. 7). *Chaetotaxy*: Ti 2-2-1-?0, Ge 1-1-0-0, Fe ?-1-0-0, Tr 0-1-0-0. (Ta excluded – part of setae damaged).

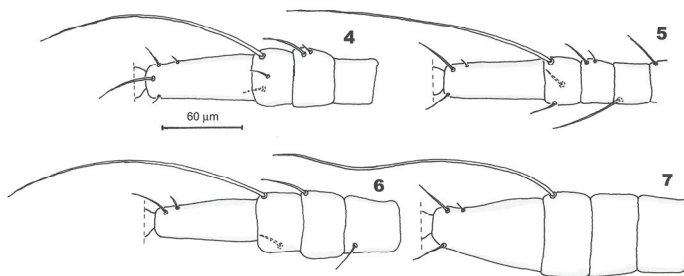
FEMALE PARATYPE. Measurements in Table I. Dorsum punctate, with striae in posterior margin of idiosoma, 9 pairs of minute setae and relatively long setae vi. Short

striae situated in posterior part of idiosoma (Fig. 8). *Idiosoma* ventrally with epimera II, III and IV. A pair of setae 1a anterior to epimera II; between epimera II and IV 2 pairs of setae. There are 5 pairs of setae near anus. Longitudinal striae at lateral margin of idiosoma present (Fig. 9). *Tarsi* I-III subequal in length or tarsi III and IV somewhat longer than tarsi I-II (Figs 10-13). *Chaetotaxy*: Ti 2-2-1-1, Ge 2-1-0-0, Fe 1-1-0-0, Tr 0-0-1-0.

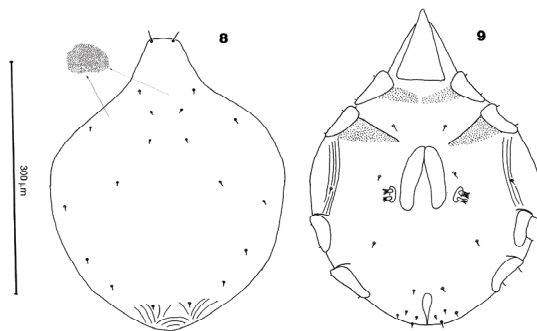
REMARKS. The genus *Kamarucoptes* includes 5 species: *Kamarucoptes doubeicus* Haitlinger, 2002, *Kamarucoptes ruvenzoricus* Haitlinger, 2002, *Kamarucoptes lycius* Haitlinger, 2002, *Kamarucoptes sibuticus* Haitlinger, 2002 and *Kamarucoptes tsaratananaicus* Haitlinger, 2002 (Haitlinger, 2002) and nine species now described. For this species and all other species described below: arrange these data in a table and refer to in the text. *Kamarucoptes libengicus* sp. n. (males) differs from *K. doubeicus* in longer Tal (70-80 vs 64), TalII (70-78 vs 66-70), TalIV (72-84 vs 60-66), ϕ I (174-192 vs 126-134), ϕ II (172-194 vs 136), ϕ III (190-208 vs 140), ϕ IV (186-224 vs 132-144), shorter ads (28-34 vs 52-54) and posterior margin rounded without small lobes vs posterior margin almost straight bearing small lobes; from *K. ruvenzoricus* in longer Tal (70-80 vs 66), TalII (70-78 vs 64), ϕ I (174-192 vs 130), ϕ II (172-194 vs 150), ϕ III (190-208 vs 172), ϕ IV (186-224 vs 156), wider WTalIV (48-56 vs 32), WTiIV (50-60 vs 32) and lack caudal lobes; from *K. lycius* in longer ϕ I (174-192 vs 160), ϕ II (172-194 vs 156), ϕ III (190-208 vs 162), ϕ IV (186-224 vs 156) and lack caudal lobes; from *K. sibuticus* in longer Tal (70-80 vs 60-66), TalII (70-78 vs 64-72), ϕ I (174-192 vs 144-164), ads (28-34 vs 14-24), shorter ϕ IV (186-224 vs 244-274), wider WTal (30-36 vs 16-24), WTiIV (50-60 vs 22-34) and posterior margin of idiosoma rounded; from *K. tsaratananaicus* in longer Tal (70-80 vs 58), TalII (70-78 vs 64), TalIII (70-78 vs 64), ϕ I (174-192 vs 126), ϕ II (194-230 vs 158), ϕ III (190-208 vs 164), ϕ IV (186-224 vs 160), shorter σ I (36-44 vs 66), σ II (18-24 vs 40) and lack of caudal lobes; from *K. tanzanicus* sp. n. in the shorter Tal (70-80 vs 92-102), TalII (70-78 vs 92-102), TalIII (70-78 vs 94-102), TalIV (72-84 vs 96-104), ϕ I (174-192 vs 212-242), ϕ II (172-194 vs 222-260), ϕ III (190-208 vs 266-300), ϕ IV (186-224 vs 232-280), σ I (36-44 vs 50-58) and ads (28-34 vs 36-48); from *K. cameroonicus* sp. n. in longer TalIV (72-84 vs 62-64), the shorter σ I (36-44 vs 48-54), σ II (18-24 vs 24-32), ads (28-34 vs 36-50), posterior margin rounded without lobes vs posterior margin almost straight with lobes; from *K. barombicus* sp. n. in longer TalIV (72-84 vs 68-70), ϕ I (174-192 vs 132-140), ϕ II (172-194 vs 130-144), ϕ III (190-208 vs 144-152), ϕ IV (186-224 vs 140-160), the shorter σ I (36-44 vs 52-54), σ II (18-24 vs 26-38), σ III (30-40 vs 42-52), ads (28-34 vs 32-48) and posterior margin of idiosoma rounded vs posterior margin of idiosoma almost straight; from *K. hiliaryi* sp. n. in longer ϕ I (174-192 vs 164), wider WTal (30-36 vs 26), WTalIV (48-56 vs 42) and posterior margin of idiosoma rounded vs posterior margin almost straight; from *K. nigericus* sp. n. in posterior margin of idiosoma rounded without small processes vs posterior margin al-



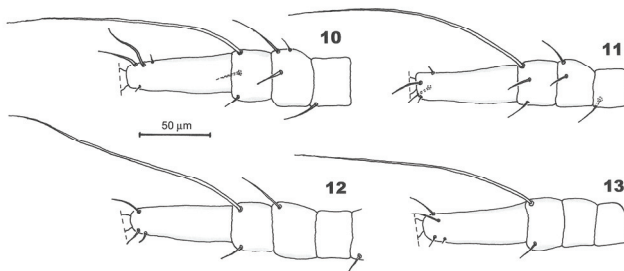
Figures 1-3. *Kameronuoptes libengicus* sp. n., male: 1. idiosoma, dorsal view; 2. idiosoma, ventral view; 3. genital apparatus.



Figures 4-7. *Kameronuoptes libengicus* sp. n., male: 4. leg I; 5. leg II; 6. leg III; 7. leg IV.



Figures 8-9. *Kameronuoptes libengicus* sp. n., female: 8. idiosoma, dorsal view; 9. idiosoma, ventral view.



Figures 10-13. *Kameronuoptes libengicus* sp. n., female: 10. leg I; 11. leg II; 12. leg III; 13. leg IV.

most straight with small processes, WTaIV (48-56 vs 40) and WTiIV (50-60 vs 44); from *K. leopoldi* sp. n. in longer TaI (70-80 vs 62-68), TaIV (72-84 vs 64-68), the shorter σ I (36-44 vs 50-60), σ II (18-24 vs 30-40), posterior margin of idiosoma rounded vs posterior margin of idiosoma almost straight; from *K. guineus* sp. n. in longer ϕ I (174-192 vs 166), ϕ II (172-194 vs 166-174), ϕ III (190-208 vs 180-184), the shorter ads (28-34 vs 50-54) and posterior margin of idiosoma rounded vs posterior margin of idiosoma almost straight and from *K. bazylii* sp. n. in the shorter IL (349-400 vs 444), ads 28-34 vs 44, longer TaIV (72-84 vs 68) and posterior margin of idiosoma rounded vs posterior margin of idiosoma almost straight.

***Kamerucoptes tanzanicus* sp. n.**

Figs 14-26

TYPE MATERIAL. Male holotype (MNHWU), locality unknown, Tanzania, from *Aspidomorpha ingens* DuVivier, 1891. Paratypes: 7♂♂, 3♀♀, same data as holotype.

ETYMOLOGY. Named after the name of the country where the holotype was collected.

DIAGNOSIS. TaI 92-102, TaIV 96-104, ϕ I 212-242, ϕ IV 232-280, σ I 50-58, WTiIV 34-42, posterior margin of idiosoma almost straight, short.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table I. *Idiosoma* somewhat shorter than long (in paratypes idiosoma somewhat longer than wide or shorter than long); opisthosoma very short with almost straight posterior margin of idiosoma. Dorsal surface with 77 pairs of minute setae (poorly visible), setae vi relatively long. Dorsum punctate (Fig. 14). *Idiosoma* ventrally with epimera II and IV. A pair of setae Ia anterior to epimera II. Two pairs of setae anterior to genital apparatus. Beyond genital apparatus 2 pairs of setae (one pair on posterior margin of idiosoma). Genital apparatus as in Fig. 16. Adanal suckers placed relatively far from posterior margin of idiosoma. At lateral margin of idiosoma placed longitudinal striae (Fig. 15). *Tarsi* I-IV equal in length (in paratypes equal or subequal in length) (Table II). *Chaetotaxy*: Ti 2-2-1-1, Ge 1-1-0-0, Fe 1-1-0-0 (Figs 17-20). (Ta excluded – some setae damaged).

FEMALE PARATYPE. Measurements in Table I. *Dorsum* with 9 pairs of minute setae and a pair of relatively long setae vi. Dorsal surface punctate, partly ornamented by longitudinal and transverse striae. Opisthosoma narrow (Fig. 21). *Idiosoma* ventrally with epimera II and IV. A pair of setae Ia anterior to epimera II and posterior to epimera II there are 5 pairs of setae (Fig. 22). *Tarsi* I-II shorter than tarsi III-IV (Table I). *Chaetotaxy*: Ti 2-2-1-1, Ge 1-1-0, Fe 0-0-0-0, Tr 0-1-1-0.

REMARKS. *Kamerucoptes tanzanicus* sp. n. differs from *K. doubeicus* in longer TaI (92-102 vs 64), TaII (92-102 vs 66-70), TaIII (94-102 vs 72), TaIV (96-104 vs 60-66), ϕ I (212-242 vs 126-134), ϕ II (222-260 vs 140), ϕ III (266-300 vs 140), ϕ IV (232-280 vs 132-144), σ I (50-58 vs 36-38), σ II (28-38 vs 16-20), shorter ads (36-48 vs 52-54) and

WTiIV (34-42 vs 60-62); from *K. ruvenzoricus* in longer TaI (92-102 vs 66), TaII (92-102 vs 64), TaIII (94-102 vs 70), TaIV (96-104 vs 70), ϕ I (212-242 vs 130), ϕ II (222-260 vs 150), ϕ III (266-300 vs 172), ϕ IV (232-280 vs 156), σ I (50-58 vs 42) and lack caudal lobes; from *K. lycius* in longer TaI (92-102 vs 80), TaII (92-102 vs 82), TaIII (94-102 vs 70), TaIV (96-104 vs 80), ϕ I (212-242 vs 160), ϕ II (222-260 vs 156), ϕ III (266-300 vs 162), ϕ IV (232-280 vs 156) and lack caudal lobes; from *K. sibuticus* in longer TaI (92-102 vs 60-66), TaII (92-102 vs 64-72), TaIII (94-102 vs 70-74), TaIV (96-104 vs 72-84), ϕ I (212-242 vs 144-162), σ I (50-58 vs 30-40), σ II (28-38 vs 18-22), ads (36-48 vs 14-24) and adanal suckers placed 36-44 μ m from posterior margin of idiosoma vs 12-26 μ m (measured from posterior margin of suckers); from *K. tsaratananaicus* in longer TaI (92-102 vs 58), TaII (92-102 vs 64), TaIII (94-102 vs 64), TaIV (96-104 vs 80), ϕ I (212-242 vs 126), ϕ II (222-260 vs 158), ϕ III (266-300 vs 164) and ϕ IV (232-280 vs 160); from *K. cameroonius* sp. n. in longer TaI (92-102 vs 66-72), TaII (92-102 vs 68-74), TaIII (94-102 vs 70-72), TaIV (96-104 vs 62-64), ϕ I (212-242 vs 178-190), ϕ II (222-260 vs 178-192), ϕ III (266-300 vs 186-204), ϕ IV (232-280 vs 192-196) and shorter WTiIV (34-42 vs 56-64); from *K. barombicus* sp. n. in longer TaI (92-102 vs 70), TaII (92-102 vs 70), TaIII (94-102 vs 70), TaIV (96-104 vs 68), ϕ I (212-242 vs 132), ϕ II (222-260 vs 130), ϕ III (266-300 vs 144), ϕ IV (232-280 vs 140) and shorter WTiIV (34-42 vs 54-58); from *K. hilaryi* sp. n. in longer TaI (92-102 vs 66), TaII (92-102 vs 68), TaIII (94-102 vs 74), TaIV (96-104 vs 80), ϕ I (212-242 vs 164), ϕ II (222-260 vs 180), ϕ III (266-300 vs 200), ϕ IV (232-280 vs 196), σ I (50-58 vs 40) and shorter WTiIV (34-42 vs 58); from *K. nigericus* sp. n. in longer TaI (92-102 vs 70), TaII (92-102 vs 72), TaIII (94-102 vs 72), TaIV (96-104 vs 78), ϕ I (212-242 vs 180), ϕ II (222-260 vs 196), ϕ III (266-300 vs 190), ϕ IV (232-280 vs 210) and σ I (50-58 vs 40); from *K. leopoldi* sp. n. in longer TaI (92-102 vs 62-68), TaII (92-102 vs 70-72), TaIII (94-102 vs 70-72), TaIV (96-104 vs 64-68), ϕ I (212-242 vs 174-190), ϕ II (222-260 vs 180-190), ϕ IV (232-280 vs 186-196) and shorter WTiIV (34-42 vs 44-58); from *K. guineus* sp. n. in longer TaI (92-102 vs 80), TaII (92-102 vs 84), TaIII (94-102 vs 84), TaIV (96-104 vs 68), ϕ I (212-242 vs 166), ϕ II (222-260 vs 174), ϕ III (260-300 vs 180) and shorter WTiIV (34-42 vs 60); from *K. bazylii* sp. n. in longer TaI (92-102 vs 70), TaII (92-102 vs 72), TaIII (94-102 vs 72), TaIV (96-104 vs 68), ϕ I (212-242 vs 164), ϕ II (222-260 vs 172), ϕ IV (232-280 vs 180), σ I (50-58 vs 40) and shorter WTiIV (34-42 vs 58).

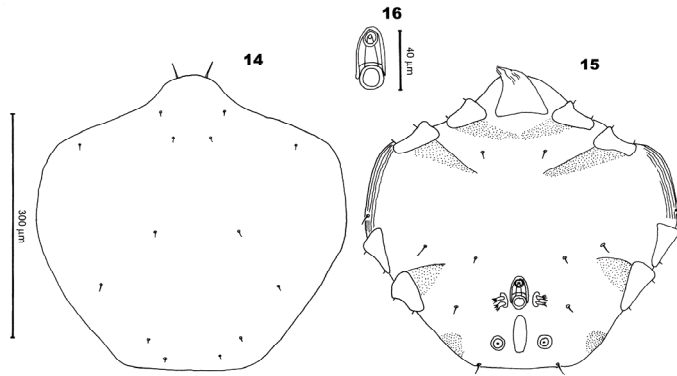
***Kamerucoptes cameroonius* sp. n.**

Figs 27-39

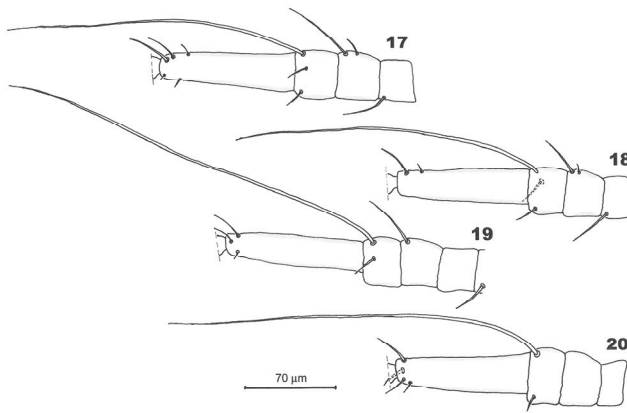
TYPE MATERIAL. Male holotype – (MNHWU); district Adamaua, locality unknown, Cameroon, from *Aspidomorpha chlorotica* (Olivier, 1808). Paratypes: 5♂♂, 5♀♀, same data as holotype.

ETYMOLOGY. Named after the name of the country.

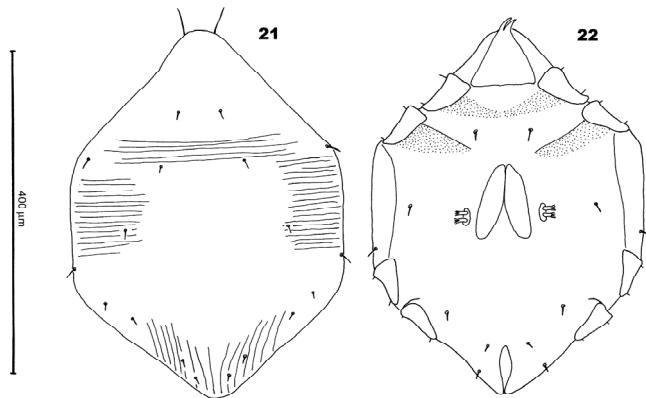
DIAGNOSIS. TaI 66-72, TaIV 62-64, ϕ I 178-190, ϕ IV 192-196, σ I 48-54, WTiIV 56-64, posterior margin of idiosoma relatively long with lobes.



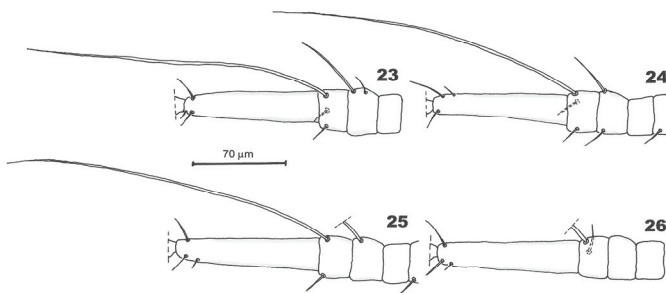
Figures 14-16. *Kameronuoptes tanzanicus* sp. n., male: 14. idiosoma, dorsal view; 15. idiosoma, ventral view; 16. genital apparatus.



Figures 17-20. *Kameronuoptes tanzanicus* sp. n., male: 17. leg I; 18. leg II; 19. leg III; 20. leg IV.



Figures 21-22. *Kameronuoptes tanzanicus* sp. n., female: 21. idiosoma, dorsal view; 22. idiosoma, ventral view.



Figures 23-26. *Kameronuoptes tanzanicus* sp. n., female: 23. leg I; 24. leg II; 25. leg III; 26. leg IV.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table II. *Dorsum* punctate with 9 pairs of minute setae and relatively long setae vi. Posterior margin of idiosoma almost straight, relatively wide. Opisthosoma very short with small membranous lobes (Fig. 27). *Idiosoma* ventrally with epimera II and IV. A pair of setae Ia anterior to epimera II. 2 pairs of setae anterior to genital region; beyond genital region 2 pairs of setae. At lateral margins placed longitudinal striae. Genital apparatus as in Fig. 29. *Tarsi* I-IV subequal in length; tarsi IV thick. *Tarsi* I and II with solenidion in their distal part. *Chaetotaxy*: Ti 2-2-1-1, Ge1-1-0-0, Fe1-1-0-0, Tr 0-0-1-1 (Figs 30-33). FEMALE PARATYPE. *Dorsal* surface of idiosoma in anterior part of idiosoma punctate, in median part and posterior part of idiosoma with longitudinal and transverse striae, 9 pairs of minute setae and a pair of longer setae vi (Fig. 34). *Idiosoma* ventrally with epimera II, III and IV; anterior to epimera II a pair of setae Ia. Median area of idiosoma with 2 pairs of setae. Beyond genital region 4 pairs of setae. At lateral margin placed longitudinal striae (Fig. 35). *Tarsi* I-III subequal in length, tarsi IV longer than the remaining ones (Figs 36-39). *Chaetotaxy*: Ti 2-?1-1-1, Ge1-1-0-0, Fe 1-1-0-0, Tr 0-0-1-0.

REMARKS. *Kamerucoptes cameroonius* sp. n. differs from *K. doubeicus* in longer ϕ I (178-190 vs 126-134), ϕ II (178-192 vs 136), ϕ III (186-204 vs 140), ϕ IV (192-196 vs 132-144), σ I (48-54 vs 36-38) and σ II (24-32 vs 16-20); from *K. ruvenzoricus* in longer ϕ I (178-190 vs 130), ϕ II (178-192 vs 150), ϕ III (186-204 vs 172), ϕ IV (192-196 vs 156), σ I (48-54 vs 42) and thicker WTiIV (56-64 vs 40); from *K. lycius* in longer ϕ I (178-190 vs 160), ϕ II (178-192 vs 156), ϕ III (186-204 vs 162), ϕ IV (192-196 vs 156), shorter IL (336-362 vs 413) and IW (297-343 vs 406); from *K. sibuticus* in longer ϕ I (178-190 vs 144-164), σ I (48-52 vs 30-40), σ II (24-32 vs 18-22), shorter ϕ II (178-192 vs 214-240), ϕ III (186-204 vs 224-264), ϕ IV (192-196 vs 244-274) and wider WTiIV (56-64 vs 22-34); from *K. tsaratananaicus* differs in longer ϕ I (178-190 vs 126), ϕ II (178-192 vs 158), ϕ III (186-204 vs 164), ϕ IV (192-196 vs 160), WTiIV (56-64 vs 44), shorter σ I (48-54 vs 66) and σ II (24-32 vs 40); from *K. barumbicus* sp. n. in longer ϕ I (178-190 vs 132-140), ϕ II (178-192 vs 130-144), ϕ III (186-204 vs 144-152), ϕ IV (192-196 vs 140-160) and wider posterior margin of idiosoma; from *K. hiliaryi* sp. n. in shorter TaIV (62-64 vs 80), longer σ I (48-54 vs 38-44), ads (36-50 vs 30), adanal suckers relatively far from posterior margin of idiosoma vs adanal suckers at posterior margin of idiosoma and lack of membranous lobes on posterior margin of idiosoma; from *K. nigericus* in longer σ I (48-54 vs 40), WTiIV (56-64 vs 44), wider posterior margin of idiosoma with membranous lobes vs shorter posterior margin of idiosoma without membranous lobes and adanal suckers placed relatively far from posterior margin of idiosoma vs adanal suckers placed at posterior margin of idiosoma; from *K. leopoldi* in longer IL (336-362 vs 311-336), shorter σ I (48-54 vs 50-60), σ II (24-32 vs 30-40), σ III (34-40 vs 38-52), WTaIV (50-54 vs 42-50), WTiIV (56-64 vs 44-58) and 2 pairs of setae placed between genital apparatus and adanal suckers vs 2 pairs of

setae placed same level as adanal suckers; from *K. guineus* in the shorter IL (336-362 vs 400-413), IW (297-343 vs 387-393), TaI (66-72 vs 80), TaII (68-74 vs 80-84), TaIII (70-72 vs 80-84), longer ϕ I (178-192 vs 166), ϕ II (178-192 vs 166-174) and lack membranous lobes and from *K. bazylii* in the shorter IL (336-362 vs 444), IW (297-343 vs 381), longer ϕ I (178-190 vs 164), σ I (48-54 vs 40), wider posterior margin of idiosoma and the presence of membranous lobes on posterior margin of idiosoma.

Kamerucoptes barumbicus sp. n.

Figs 40-46

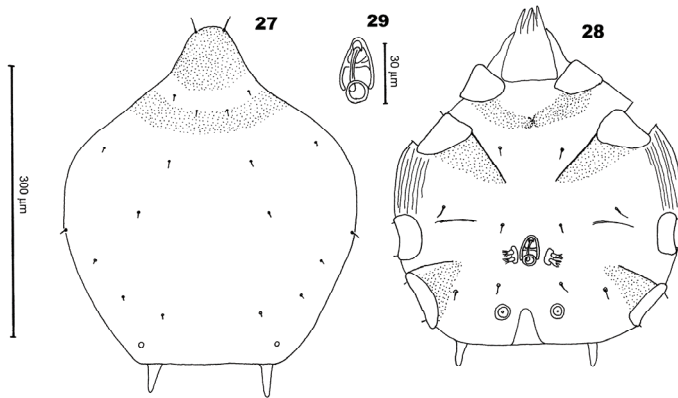
TYPE MATERIAL. Male holotype (MNHWU), Lake Barombi, Cameroon, from *Cassida inaequalis* Thompson, 1858. Paratypes: 3♂♂, same data.

ETYMOLOGY. Named after the name of the lake Barombi.

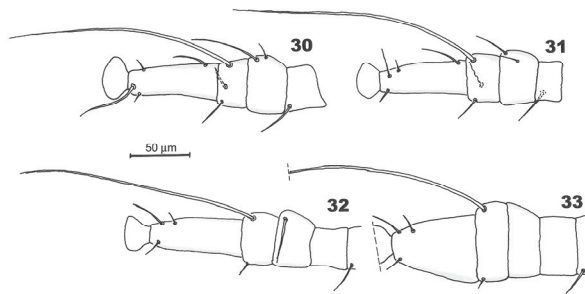
DIAGNOSIS. TaI 66-70, TaIV 68-70, ϕ I 132-140, ϕ IV 140-160, σ I 52-54, WTiIV 54-58, posterior margin of idiosoma almost straight with small processes.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table II. *Dorsum* punctate with 10 minute setae and pair of relatively long setae vi. Posterior margin of idiosoma with small lobes (Fig. 40). *Idiosoma* ventrally with epimera I-IV. A pair of setae Ia anterior to epimera II. 2 pairs of setae anterior to genital region. Between genital apparatus and adanal suckers 3 pairs of setae. At lateral margins of idiosoma placed longitudinal striae (Fig. 41). Genital apparatus as in Fig. 42. *Tarsi* I-IV subequal in length, tarsi IV thicker than the remaining ones (Figs 43-46). *Chaetotaxy*: Ti 2-?1-1-1, Ge 1-1-0-0, Fe 1-1-1-0, Tr 1-1-0-1.

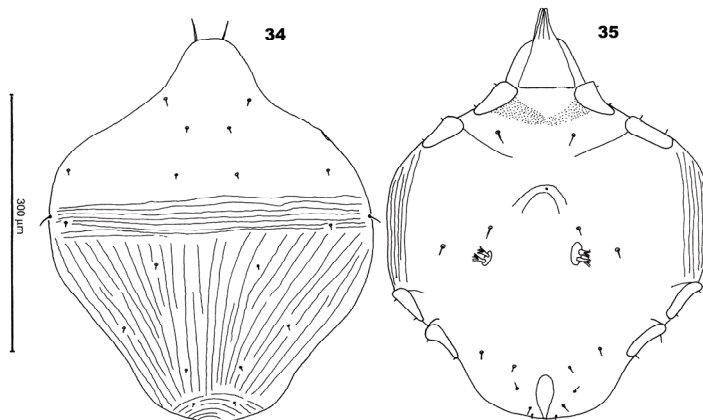
REMARKS. *Kamerucoptes barumbicus* sp. n. differs from *K. doubeicus* in longer σ I (52-54 vs 30-38), σ II (26-38 vs 16-20), shorter ads (36-50 vs 52-54) and the presence of small lobes vs longer membranous lobes; from *K. ruvenzoricus* in longer σ I (52-54 vs 42), WTaIV (46-52 vs 32), WTiIV (54-58 vs 40) and ads (32-48 vs 18); from *K. lycius* in shorter IL (355-396 vs 413), IW (336-387 vs 406), TaI (66-70 vs 80), TaII (70-72 vs 82), TaIV (68-70 vs 84) and lack membranous lobes; from *K. sibuticus* in the shorter ϕ II (146-152 vs 214-240), ϕ III (144-152 vs 224-264), ϕ IV (140-160 vs 244-274), longer σ I (52-54 vs 30-40), σ II (26-38 vs 18-22), σ III (42-52 vs 28-30) and WTiIV (54-58 vs 22-34); from *K. tsaratananaicus* in the shorter σ I (52-54 vs 66), wider WTaIV (46-52 vs 36) and WTiIV (54-58 vs 44); from *K. hiliaryi* in the shorter TaIV (68-70 vs 80), ϕ I (132-140 vs 164), ϕ II (130-144 vs 180), ϕ III (144-152 vs 200), ϕ IV (140-160 vs 196), longer σ I (52-54 vs 40), σ III (42-52 vs 36) and the presence of small lobes on posterior margin of idiosoma; from *K. nigericus* in the shorter TaIV (68-70 vs 78), ϕ II (132-140 vs 180), ϕ III (130-144 vs 190), ϕ IV (144-152 vs 190), ϕ IV (140-160 vs 210), longer σ I (52-54 vs 40), wider WTaIV (46-52 vs 40) and WTiIV (54-58 vs 44); from *K. leopoldi* in longer IL (355-396 vs 311-336), the shorter ϕ I (132-140 vs



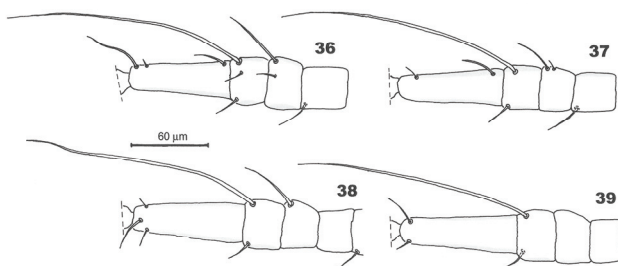
Figures 27-29. *Kamericoptes cameroonicus* sp. n., male: 27. idiosoma, dorsal view; 28. idiosoma, ventral view; 29. genital apparatus.



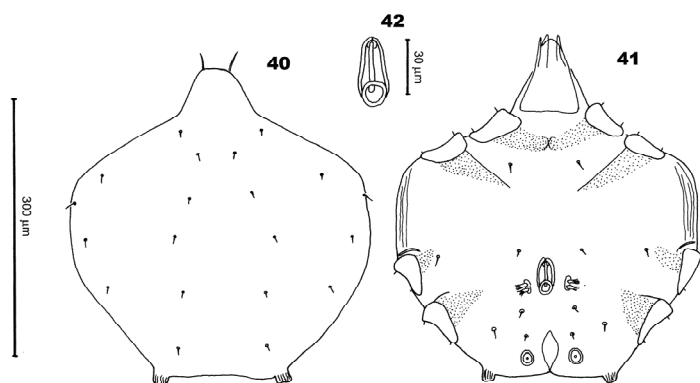
Figures 30-33. *Kamericoptes cameroonicus* sp. n., male: 30. leg I; 31. leg II; 32. leg III; 33. leg IV.



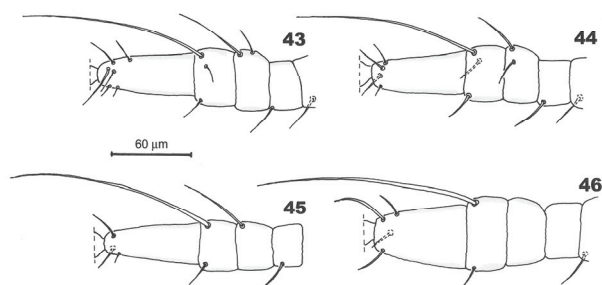
Figures 34-35. *Kamericoptes cameroonicus* sp. n., female: 34. idiosoma, dorsal view; 35. idiosoma, ventral view.



Figures 36-39. *Kamericoptes cameroonicus* sp. n., female: 36. leg I; 37. leg II; 38. leg III; 39. leg IV.



Figures 40-42. *Kamericoptes barombicus* sp. n., male: 40. idiosoma, dorsal view; 41. idiosoma, ventral view; 42. genital apparatus.



Figures 43-46. *Kamericoptes barombicus* sp. n., male: 43. leg I; 44. leg II; 45. leg III; 46. leg IV.

174-190), ϕ II (132-140 vs 180-190), ϕ III (132-140 vs 186-200), ϕ IV (140-160 vs 186-196) and 3 pairs of ventral setae placed between genital apparatus and adanal suckers vs 2 pairs of ventral setae placed the same level as adanal suckers; from *K. guineus* in the shorter IL (355-396 vs 400-413), TaI (66-70 vs 80), TaII (70-72 vs 80-84), TaIII (70-74 vs 80-84), ϕ I (132-140 vs 166), ϕ II (132-140 vs 166-174), ϕ III (132-140 vs 180-184), ϕ IV (140-160 vs 186) and ads (32-48 vs 50-54) and from *K. bazylii* in the shorter IL (355-396 vs 444), ϕ I (132-140 vs 164), ϕ II (132-140 vs 172), ϕ IV (140-160 vs 180), longer σ I (52-54 vs 40) and the presence of small lobes on the posterior margin of idiosoma.

***Kamericoptes hilaryi* sp. n.**

Figs 47-59

TYPE MATERIAL. Male holotype (MNHWU), locality unknown, Tanzania, from *Aspidomorpha submutata* Weise, 1899. Paratypes: 3♀, same data.

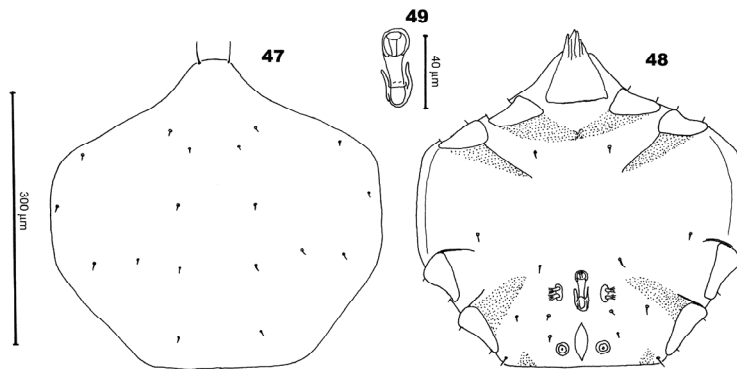
ETYMOLOGY. The name of the species has been derived from the name Hilary.

DIAGNOSIS. TaI 66, TaIV 80, ϕ I 164, ϕ IV 196, σ I 40, WTiIV 58, posterior margin of idiosoma almost straight, relatively wide.

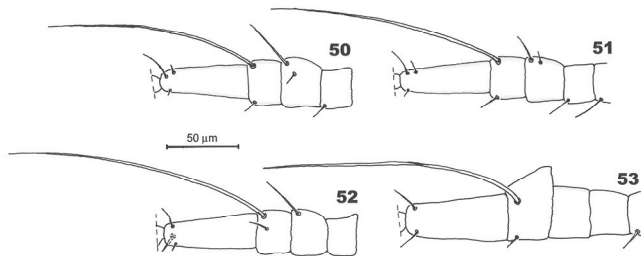
DESCRIPTION. MALE HOLOTYPE. Measurements in Table III. *Dorsum* punctate with 9 pairs of minute setae and a pair of longer setae vi (Fig. 47). *Idiosoma* ventrally with epimera II, III and IV; a pair of setae 1a anterior to epimera II. Median part of idiosoma with 2 pairs of setae and beyond genital apparatus 3 pairs of setae. Genital apparatus as in Fig. 49. Adanal suckers at posterior margin of idiosoma (Fig. 48). *Tarsi* I-II subequal in length, tarsi IV are longer and wider than the other ones (Fig. 50-53). *Chaetotaxy*: Ti ?1-?1-1-1, Ge 1-1-?-0, Fe 1-1-0-0, Tr 0-1-0-1.

FEMALE PARATYPE. Anterior part of *dorsum* punctate, median part of idiosoma with transverse striae and posterior part of idiosoma with striae arranged as in Fig. 54. *Dorsum* has 9 pairs of minute setae and a pair of relatively long setae vi. *Idiosoma* ventrally with epimera II; a pair of setae 1a anterior to epimera II; median area with 2 pairs of setae and beyond genital region 4 pairs of setae (Fig. 55). *Tarsi* I-III subequal in length, tarsi IV longer than the remaining ones (Figs 56-59). *Chaetotaxy*: Ti 1-1-1-0, Ge 2-1-?-0, Fe 0-0-0-0, Tr 1-1-1-1.

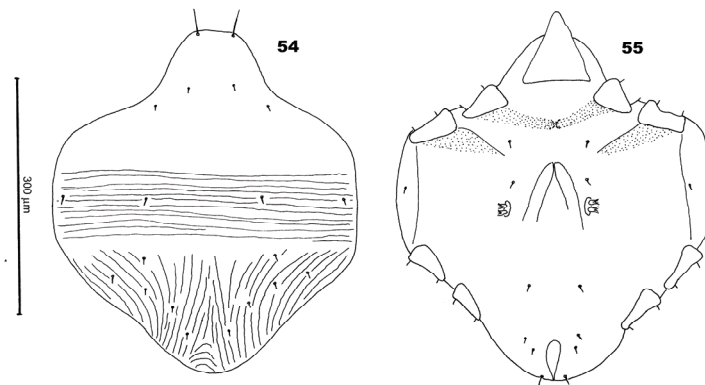
REMARKS. *Kamericoptes hilaryi* sp. n. differs from *K. doubeicus* in longer TaIV (80 vs 60-66), ϕ I (164 vs 126-134), ϕ II (180 vs 136), ϕ III (200 vs 140), ϕ IV (196 vs 132-144), shorter ads (30 vs 52-54) and lack membraneous lobes; from *K. ruvenzoricus* in longer TaIV (80 vs 70), ϕ I (164 vs 130), ϕ II (180 vs 150), ϕ III (200 vs 172), ϕ IV (196 vs 156), WTiIV (42 vs 32), WTiIV (58 vs 40) and ads (30



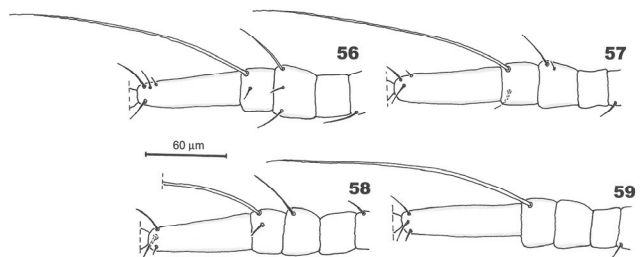
Figures 47-49. *Kameronuoptes hiliaryi* sp. n., male: 47. idiosoma, dorsal view; 48. idiosoma, ventral view; 49. genital apparatus.



Figures 50-53. *Kameronuoptes hiliaryi* sp. n., male: 50. leg I; 51. leg II; 52. leg III; 53. leg IV.



Figures 54-55. *Kameronuoptes hiliaryi* sp. n., female: 54. idiosoma, dorsal view; 55. idiosoma, ventral view.



Figures 56-59. *Kameronuoptes hiliaryi* sp. n., female: 56. leg I; 57. leg II; 58. leg III; 59. leg IV.

vs 18); from *K. lycius* in the shorter IL (362 vs 413), IW (374 vs 406), TaI (66 vs 80), TaII (68 vs 82), σ I (40 vs 52), ads (30 vs 44), longer ϕ II (180 vs 156), ϕ III (200 vs 162) and ϕ IV (196 vs 162); from *K. sibuticus* in the shorter ϕ II (180 vs 214-240), ϕ III (200 vs 224-264), ϕ IV (196 vs 244-274), longer WTaIV (42 vs 18-28), WTiIV (58 vs 22-34) and ads (30 vs 14-24); from *K. tsaratananaicus* in longer ϕ I (164 vs 126), ϕ II (180 vs 158), ϕ III (200 vs 164), ϕ IV (196 vs 160), the shorter σ I (40 vs 66), σ II (20 vs 40) and wider WTiIV (58 vs 44); from *K. nigericus* in wider WTiIV (58 vs 44), wider opisthosoma and lack small triangular processes on posterior margin of idiosoma; from *K. leopoldi* in longer TaIV (80 vs 64-68), the shorter σ I (40 vs 50-60), σ II (20 vs 30-40) and lack membraneous lobes on posterior margin of idiosoma; from *K. guineus* in the shorter IL (362 vs 400-413), TaI (66 vs 80), TaII (68 vs 80-84), TaIII (74 vs 80-84), σ III (36 vs 44), ads (30 vs 54) and longer TaIV (80 vs 68) and from *K. bazylii* in the shorter IL (362 vs 444), ads (30 vs 44), longer TaIV (80 vs 68), genital apparatus placed near posterior margin of idiosoma vs genital apparatus placed far from posterior margin of idiosoma and wide posterior margin of idiosoma vs short posterior margin of idiosoma.

***Kamerucoptes nigericus* sp. n.**

Figs 60-72

TYPE MATERIAL. Male holotype (MNHWU), Warri, Nigeria, 17.09.1967, from *Aspidomorpha fenestrata* (Olivier, 1808); leg. Roth. Paratypes: 3♀, the same data as the holotype.

ETYMOLOGY. Named after the name of the country.

DIAGNOSIS. TaI 70, TaIV 78, ϕ I 180, ϕ IV 210, σ I 40, WTiIV 44, posterior margin of idiosoma almost straight with small triangular processes.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table III. *Dorsum* punctate with 9 pairs of minute setae and a pair of relatively long setae vi. Posterior margin of idiosoma with two short processes (Fig. 60). *Idiosoma* ventrally with epimera II and IV. A pair of setae Ia anterior to epimera II. Genital apparatus as in Fig. 62. Median part of idiosoma with 2 pairs of setae. Beyond genital apparatus 3 pairs of setae. At lateral margins of idiosoma placed longitudinal striae (Fig. 61). *Tarsi* I-III subequal in length, tarsi IV are longer and thicker than the remaining ones (Figs. 63-66). *Chaetotaxy*: Ti 2-2-1-1, Ge 2-1-0-0, Fe 0-1-0-1, Tr 0-1-0-0.

FEMALE PARATYPE. Anterior part of dorsal surface punctate, its median part with transverse striae and posterior part of idiosoma with longitudinal and rounded striae. *Dorsum* with 9 pairs of minute setae and a pair of longer setae vi (Fig. 67). *Idiosoma* ventrally with epimera II; a pair of setae Ia anterior to epimera II. Median area of idiosoma with 2 pairs of setae. Beyond genital region 5 pairs of setae. At lateral margins of idiosoma placed longitudinal striae (Fig. 61). *Tarsi* I-III subequal in length, tarsi IV are the longest (Figs. 62-65). *Chaetotaxy*: Ti 2-2-1-

1, Ge 2-1-0-0, Fe 1-1-0-0.

REMARKS. *Kamerucoptes nigericus* sp. n. differs from *K. doubeicus* in longer TaIV (78 vs 60-66), ϕ I (180 vs 126-134), ϕ II (190 vs 130-136), ϕ III (190 vs 140), ϕ IV (210 vs 132-144), shorter ads (34 vs 52-54) and lack caudal lobes; from *K. ruvenzoricus* in longer TaIV (78 vs 70), ϕ I (180 vs 130), ϕ II (190 vs 150), ϕ III (190 vs 172), ϕ IV (210 vs 156), ads (30 vs 18) and lack caudal lobes; from *K. lycius* in the shorter IL (349 vs 413), shorter TaI-III (70-72 vs 80-82), σ I (40 vs 52), ads (30 vs 44), WTaIV (40-50), WTiIV (44 vs 60), longer ϕ I (180 vs 160), ϕ II (190 vs 156), ϕ III (190 vs 162), ϕ IV (210 vs 156) and lack caudal lobes; from *K. sibuticus* in the shorter ϕ II (190 vs 214-240), ϕ III (190 vs 224-264), ϕ IV (210 vs 244-274), longer WTiIV (44 vs 22-34) and ads (34 vs 14-24); from *K. tsaratananaicus* in longer TaI (70 vs 58), TaII (72 vs 64), TaIII (72 vs 64), ϕ I (180 vs 126), ϕ II (190 vs 158), ϕ III (190 vs 164), ϕ IV (210 vs 160), shorter σ I (40 vs 66) and σ II (26 vs 40); from *K. leopoldi* in longer TaIV (78 vs 64-68), shorter σ I (40 vs 50-60) and lack caudal lobes; from *K. guineus* in the shorter IL (349 vs 400-413), TaI (70 vs 80), TaII (72 vs 80-84), TaIII (72 vs 80-84), ads (34 vs 50-54), WTiIV (44 vs 60), longer TaIV (78 vs 68), ϕ I (180 vs 166), ϕ II (190 vs 166-174), ϕ III (190 vs 180-184) and ϕ IV (210 vs 186) and from *K. bazylii* in the shorter IL (349 vs 444), ads (34 vs 44), longer TaIV (78 vs 68), ϕ I (180 vs 164), ϕ II (190 vs 172), ϕ IV (210 vs 180) and adanal suckers placed near posterior margin of idiosoma vs adanal suckers placed relatively far from posterior margin of idiosoma.

***Kamerucoptes leopoldi* sp. n.**

Figs 73-84

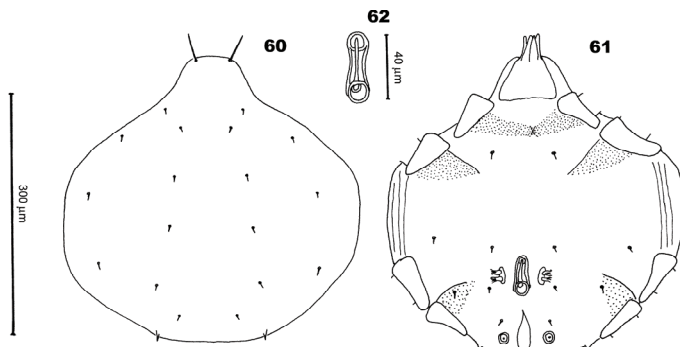
TYPE MATERIAL. Male holotype (MNHWU), Lake Barombi, Cameroon, from *Aethiopocassis kraatzi* (Weise, 1898). Paratypes: 5♂♂, 1♀, same data.

ETYMOLOGY. The name of the species has been derived from the name Leopold.

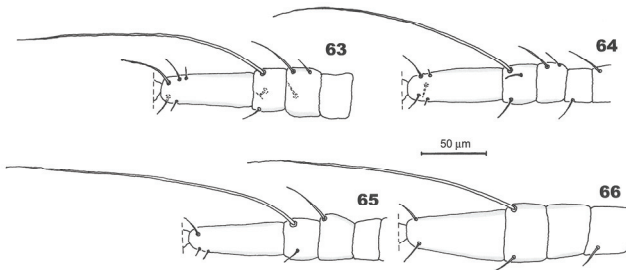
DIAGNOSIS. TaI 62-68, TaIV 64-68, ϕ I 174-190, ϕ IV 186-196, σ I 50-60, WTiIV 44-58, posterior margin of idiosoma almost straight with lobes.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table III. *Dorsum* punctate with 9 pairs of minute setae and a pair of relatively long setae vi. Posterior margin of idiosoma almost straight, relatively wide, with two membraneous lobes (Fig. 73). *Idiosoma* ventrally with epimera II, III and IV. Genital apparatus as in Fig. 75, placed relatively near posterior margin of idiosoma. A pair of setae Ia anterior to epimera II. Median part of idiosoma with 3 pairs of setae; beyond genital apparatus 2 pairs of setae placed on the same level as adanal suckers (Fig. 74). *Tarsi* II-III somewhat longer than tarsi I-IV. Tarsi I and II with ω in their distal part. Tarsi IV thicker than the remaining ones (Figs 76-79).

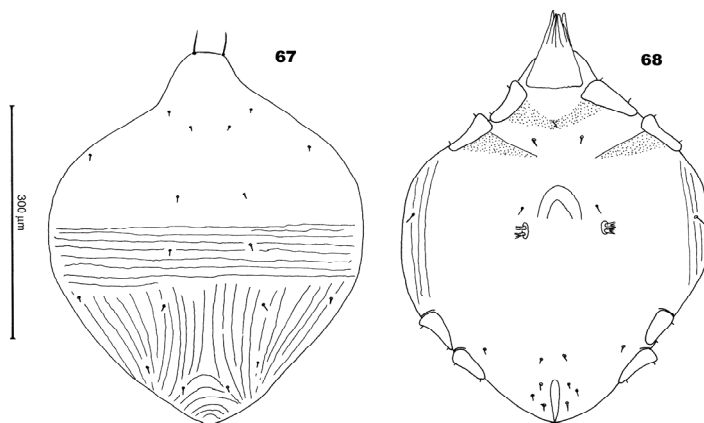
FEMALE PARATYPE. Anterior part of dorsal surface punctate; median part with transverse striae and posterior part with longitudinal and rounded striae (Fig. 80).



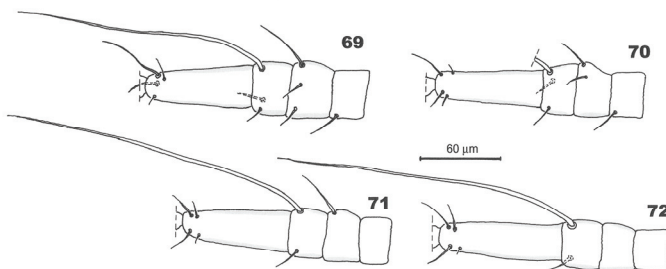
Figures 60-62. *Kameronuoptes nigericus* sp. n., male: **60.** idiosoma, dorsal view; **61.** idiosoma, ventral view; **62.** genital apparatus.



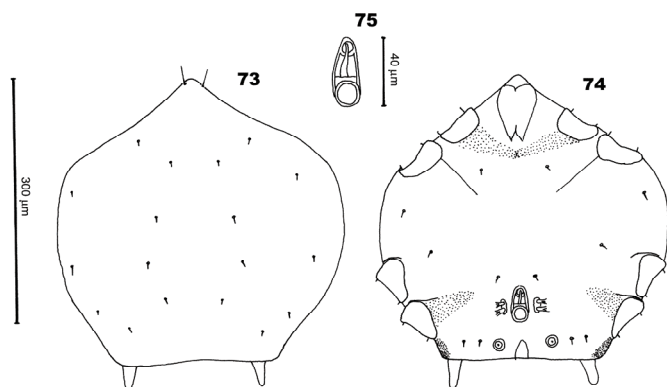
Figures 63-66. *Kameronuoptes nigericus* sp. n., male: **63.** leg I; **64.** leg II; **65.** leg III; **66.** leg IV.



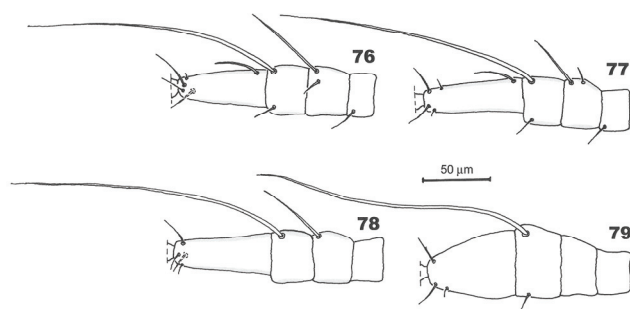
Figures 67-68. *Kameronuoptes nigericus* sp. n., female: **67.** idiosoma, dorsal view; **68.** idiosoma, ventral view.



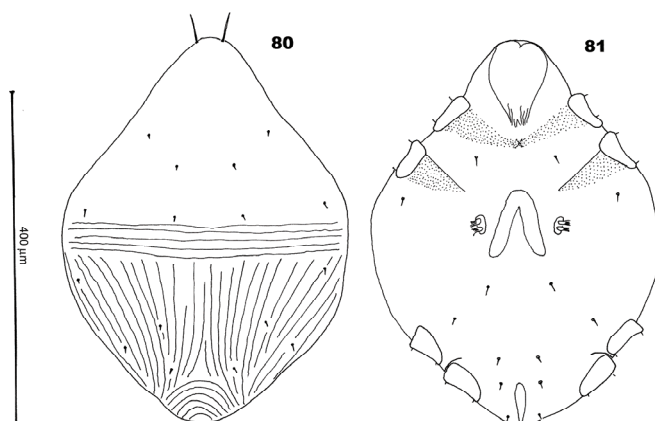
Figures 69-72. *Kameronuoptes nigericus* sp. n., female: **69.** leg I; **70.** leg II; **71.** leg III; **72.** leg IV.



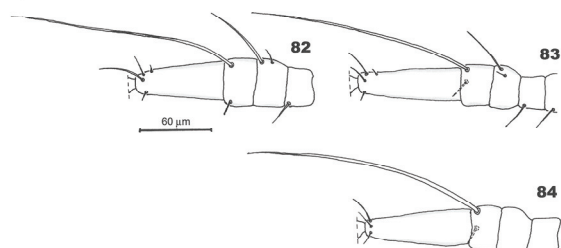
Figures 73-75. *Kamericoptes leopoldi* sp. n., male: **73.** idiosoma, dorsal view; **74.** idiosoma, ventral view; **75.** genital apparatus.



Figures 76-79. *Kamericoptes leopoldi* sp. n., male: **76.** leg I; **77.** leg II; **78.** leg III; **79.** leg IV.



Figures 80-81. *Kamericoptes leopoldi* sp. n., female: **80.** idiosoma, dorsal view; **81.** idiosoma, ventral view.



Figures 82-84. *Kamericoptes leopoldi* sp. n., female: **82.** leg I; **83.** leg II; **84.** leg IV.

Idiosoma ventrally with epimera II and IV; a pair of setae 1a anterior to epimera II. Beyond epimera II 6 pairs of setae (Fig. 81). *Tarsi* I-III distinctly shorter than tarsi IV (Figs 82-84). *Chaetotaxy* Ti1-?1-?-1, Ge 1-1-?-0, Fe 1-1-0-0, Tr 0-1-?-?.

REMARKS. *Kamerucoptes leopoldi* sp. n. differs from *K. doubeicus* in the shorter IL (311-336 vs 362-381), ads (32-44 vs 52-54), longer ϕ I (174-190 vs 126-134), ϕ II (180-190 vs 136), ϕ III (186-200 vs 140), ϕ IV (186-196 vs 132-144), σ I (50-60 vs 36-38) and σ II (30-40 vs 16-20); from *K. ruvenzoricus* in longer ϕ I (174-190 vs 130), ϕ II (180-190 vs 150), ϕ III (186-200 vs 172), ϕ IV (186-196 vs 156), σ I (50-60 vs 42) and straight posterior margin of idiosoma vs rounded posterior margin of idiosoma; from *K. lycius* in the shorter IL (311-336 vs 413), TaI (62-68 vs 80), TaII (70-72 vs 82), TaIII (70-72 vs 80), TaIV (64-68 vs 80), ϕ I (174-190 vs 160), ϕ II (180-190 vs 156), ϕ III (186-200 vs 162) and ϕ IV (186-196 vs 156); from *K. sibuticus* in the shorter TaIV (64-68 vs 72-84), ϕ II (180-190 vs 214-240), ϕ III (186-200 vs 224-264), ϕ IV (186-196 vs 244-274), longer ϕ I (174-190 vs 144-164), σ I (50-60 vs 30-40), σ II (30-40 vs 18-22), ads (32-44 vs 14-24) and WTiIV (44-59 vs 22-34); from *K. tsaratananaicus* in the shorter IL (311-336 vs 381), TaIV (64-68 vs 80), longer TaI (62-68 vs 58), TaII (70-72 vs 64), TaIII (70-72 vs 64), ϕ I (174-190 vs 126), ϕ II (180-190 vs 158), ϕ III (186-200 vs 164) and ϕ IV (186-196 vs 160); from *K. guineas* in the shorter IL (311-336 vs 400-413), TaI (62-68 vs 80), TaII (70-72 vs 80-84), TaIII (70-72 vs 80-84) and ads (32-44 vs 50-54) and from *K. bazylii* in the shorter IL (311-336 vs 444), longer σ I (50-60 vs 40), σ II (30-40 vs 20) and presence of caudal lobes vs lack posterior lobes.

***Kamerucoptes guineus* sp. n.**

Figs 84-90

TYPE MATERIAL. Male holotype (MNHUWU), locality unknown, Guinea, from *Aspidimorpha isparetta* Boheman, 1854. Paratypes: 1♂♂, 1♀, the same data.

ETYMOLOGY. Named after the country where the holotype was collected.

DIAGNOSIS. TaI 80, TaIV 68, ϕ I 166, ϕ IV 186, WTiIV 60, posterior margin of idiosoma almost straight.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table IV. *Dorsum* punctate with 9 pairs of minute setae and a pair of relatively long setae vi. Posterior margin of idiosoma almost straight (Fig. 84). *Idiosoma* ventrally with epimera II and IV. Genital apparatus as in Fig. 86. A pair of setae 1a anterior to epimera II. Median area of idiosoma with 2 pairs of setae. Beyond genital apparatus 2 pairs of setae (Fig. 85). *Tarsi* I-III subequal in length, tarsi IV are shorter and thicker than the remaining ones (Figs 87-90). *Chaetotaxy*: Ti 2-2-1-1, Ge 1-1-1-0, Fe 1-1-0-0, Tr 0-0-1-0. FEMALE PARATYPE. This specimen is strongly damaged and not figured. Measurements are given in Table IV.

REMARKS. *Kamerucoptes guineus* sp. n. differs from *K. doubeicus* in longer IL (400-413 vs 362-381), TaI (80 vs 64), TaII (80-84 vs 66-70), TaIII (80-84 vs 72), ϕ I (166 vs 126-134), ϕ II (166-174 vs 136), ϕ III (180-184 vs 140), ϕ IV (186 vs 132-144) and lack caudal lobes; from *K. ruvenzoricus* in longer IL (400-413 vs 368), TaI (80 vs 66), TaII (80-84 vs 64), TaIII (80-84 vs 70), ϕ I (166 vs 130), ϕ II (166-174 vs 150), ϕ III (180-184 vs 172), ϕ IV (186 vs 156), WTaIV (50 vs 32), WTiIV (60 vs 40), ads (50-54 vs 18) and posterior margin almost straight vs posterior margin rounded; from *K. lycius* in the shorter TaIV (68 vs 80), ϕ III (180-184 vs 162), ϕ IV (186 vs 156), longer ads (50-54 vs 44) and lack membraneous lobes; from *K. sibuticus* in longer TaI (80 vs 60-66), TaII (80-84 vs 64-72), TaIII (80-84 vs 70-74), σ III (44 vs 28-30), ads (50-54 vs 14-24), WTiIV (60 vs 22-34), the shorter TaIV (68 vs 72-84), ϕ II (164-174 vs 214-240), ϕ III (180-184 vs 224-264) and ϕ IV (186 vs 244-274); from *K. tsaratananaicus* in longer TaI (80 vs 58), TaII (80-84 vs 64), TaIII (80-84 vs 64), ϕ I (166 vs 126), ϕ II (166-174 vs 158), ϕ III (180-184 vs 164), ϕ IV (186 vs 160), WTiIV (60 vs 44) and the shorter TaIV (68 vs 80) and from *K. bazylii* in the shorter IL (400-413 vs 444), longer TaI (80 vs 70), TaII (80-84 vs 72), TaIII (80-84 vs 72), σ III (44 vs 34) and ads (50-54 vs 44).

***Kamerucoptes bazylii* sp. n.**

Figs 91-97

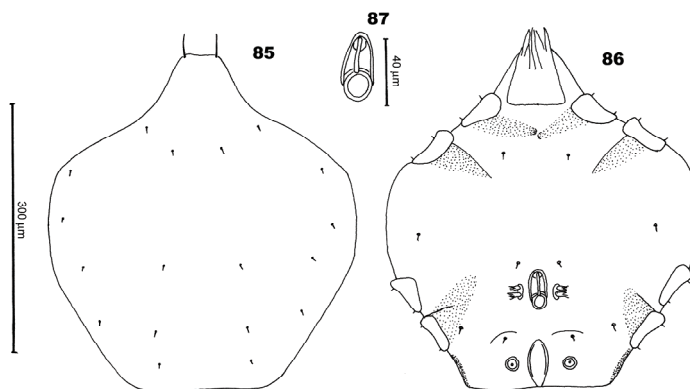
TYPE MATERIAL. Male holotype (MNHUWU), locality unknown, Tanzania, from *Conchyloctenia punctata* (Fabricius, 1787).

ETYMOLOGY. The name of the species has been derived from the name Bazyli.

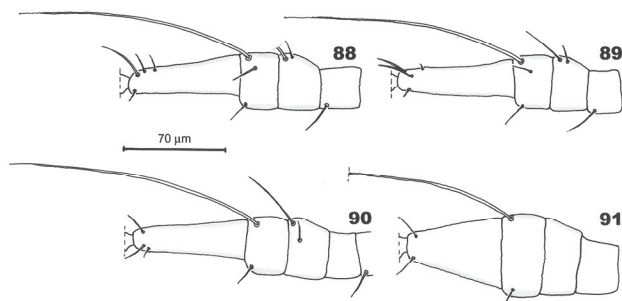
DIAGNOSIS. TaI 70, TaIV 68, ϕ I 164, ϕ IV 180, σ I 40, WTiIV 58, posterior margin of idiosoma almost straight, short.

DESCRIPTION. MALE HOLOTYPE. Measurements in Table IV. *Dorsal* surface punctate with ?8 pairs of minute setae and a pair of relatively long setae vi. Posterior margin of idiosoma almost straight, short (Fig. 91). *Idiosoma* ventrally with epimera II. Genital apparatus as in Fig. 93, placed relatively far from posterior margin of idiosoma. A pair of setae 1a anterior to epimera II. Median part of idiosoma with 2 pairs of setae. Beyond genital apparatus 2 pairs of setae. At lateral margins placed longitudinal striae (Fig. 92). *Tarsi* I-IV subequal in length; tarsi IV thicker than the remaining ones (Figs. 94-97). *Chaetotaxy*: Ti ?1-?1-1-1, Ge 1-1-1-0, Fe 1-1-0-0.

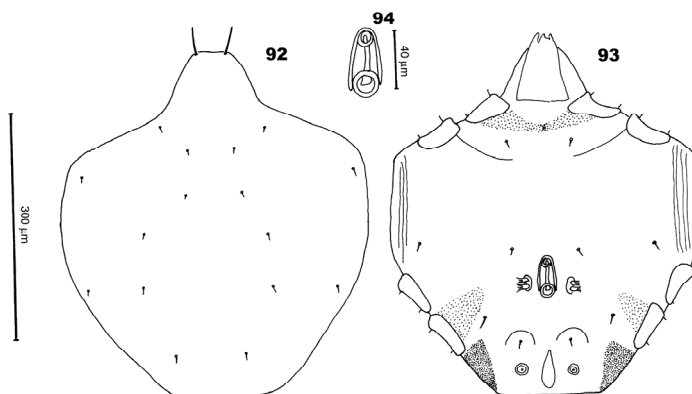
REMARKS. *Kamerucoptes bazylii* sp. n. differs from *K. doubeicus* in longer IL (444 vs 362-381), ϕ I (164 vs 126-134), ϕ II (172 vs 136), ϕ IV (180 vs 132-144), lack caudal lobes and genital apparatus placed far from posterior margin of idiosoma: from *K. ruvenzoricus* in longer IL (444 vs 368), ϕ I (164 vs 130), ϕ II (172 vs 150), ϕ IV (180



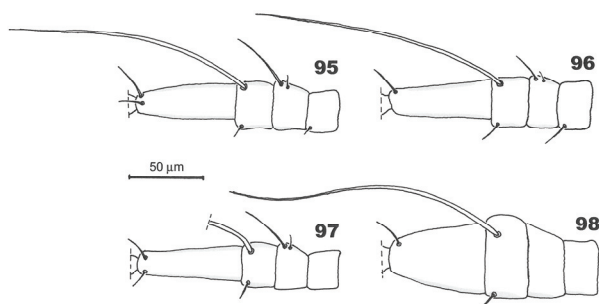
Figures 85-87. *Kamericoptes guineus* sp. n., male: **85.** idiosoma, dorsal view; **86.** idiosoma, ventral view; **87.** genital apparatus.



Figures 88-91. *Kamericoptes guineus* sp. n., male: **88.** leg I; **89.** leg II; **90.** leg III; **91.** leg IV.



Figures 92-94. *Kamericoptes bazylii* sp. n., male: **92.** idiosoma, dorsal view; **93.** idiosoma, ventral view; **94.** genital apparatus.



Figures 95-98. *Kamericoptes bazylii* sp. n., male: **95.** leg I; **96.** leg II; **97.** leg III; **98.** leg IV.

vs 156), WTiIV (58 vs 40), ads (44 vs 18) and lack caudal lobes; from *K. lycius* in the shorter TaI (70 vs 80), TaII (72 vs 82), TaIII (72 vs 80), TaIV (68 vs 80) and lack caudal lobes; from *K. sibuticus* in longer IL (444 vs 311-411), WTaIV (54 vs 18-28), WTiIV (58 vs 22-34), ads (44 vs 14-24), the shorter ϕ II (172 vs 214-240) and ϕ IV (180 vs 244-274) and from *K. tsaratananaicus* in longer IL (444 vs 381), TaI (70 vs 58), TaII (72 vs 64), TaIII (72 vs 64), WTaIV (54 vs 36), WTiIV (58 vs 44), the shorter TaIV (68 vs 80), σ I (40 vs 66) and σ II (20 vs 40).

NEW RECORDS

Kameruoptes tsaratananaicus Haitlinger, 2002

Material. 3♀♀, Madagascar, Campanempo, *Cassida rugipennis* (Boheman, 1855), leg. J. VadonIII, IX, 1950. Measurements for this species were based only on holotype male and paratype female (Haitlinger, 2002). Further measurements for females are given in Table V.

Kameruoptes sibuticus Haitlinger, 2002

Material 3♂♂, 3♀♀, Democratic Republic of Congo (Zaire), Bambesa, 30 03 1957, *Lacoptera murrayi* Boheman, 1862. First record for Democratic Republic of Congo. Measurements for this species are given in Table IV.

Erotyloptes verenae Haitlinger, 1996

Material. 1♂, Gabon, Bas Ogouné, Lambarene, *Lacoptera basalis* Weise, 1899; 1♂, Republic of South Africa, Natal, Indeleni, Richmond, *L. rugicollis* Thomson, 1858.

This species was known only from Congo Brazzaville (Haitlinger, 1996). First record for Gabon and the Republic of South Africa.

Erotyloptes helenae Haitlinger, 1996

Material. 1♂, Republic of South Africa, Natal, locality unknown, *Basipta stolidus* Boheman, 1854; 3♂♂, 2♀♀, Tanzania, Usumbara, Nguelo, *Lacoptera aurosa* Fairmaire, 1891.

This species was known from the Republic of South Africa and Mozambique (Haitlinger, 1996). First record for Tanzania. Measurements for males of *E. helenae* were based only on the holotype and 3 paratype females. Further measurements for this species are given in Table V

Acknowledgements

I would like to express my sincere thanks to Prof. Dr L. Borowiec (MNHU) for the loan of the specimens.

References

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Key to the species of the genus *Kamerucop-tes* Haitlinger, 2002 (males).

1. IL > 430 *K. bazylii* sp. n.
- IL < 420 2.
2. ϕ IV > 230 3.
- ϕ IV < 230 4.
3. σ I 30-40, ϕ I 144-164, TaIV 72-84, ads 14-24
..... *K. sibuticus* Haitlinger, 2002
- σ I 50-58, ϕ I 212-242, TaIV 96-104, ads 36-48.....
..... *K. tanzanicus* sp. n.
4. TaI > 76 *K. guineus* sp. n.
- TaI < 76 5.
5. ϕ II- ϕ IV > 170 6.
- ϕ II- ϕ IV < 170 8.
6. σ I 36-38, σ II 16-20 *K. doubeicus* Haitlinger, 2002
- σ I > 50, σ II > 20 7.
7. σ I 52-54, σ II 26-38, TaI 66-70, TaII 70-72, WTiIV 54-58 *K. barombicus* sp. n.
- σ I 60, σ II 40, TaI 58, TaII 64, WTiIV 44
..... *K. tsaratananaicus* Haitlinger, 2002
8. Posterior margin of idiosom rounded 9.
- Posterior margin of idiosoma almost straight 10.
9. ϕ I 174-192, ϕ IV 186-224, WTiIV 50-60, ads 28-34, posterior margin of idiosoma without small lobes
..... *K. libengicus* sp. n.
- ϕ I 130, ϕ IV 156, WTiIV 40, ads 18, posterior margin of idiosoma with small lobes
..... *K. ruvenzoricus* Haitlinger, 2002
10. IL > 390 *K. lycius* Haitlinger, 2002
- IL < 390 11.
11. TaIV > 74 12.
- TaIV < 72 13.
12. WTiIV 44, posterior margin of idiosoma with small processes, its width 120 *K. nigericus* sp. n.
- WTiIV 58, posterior margin of idiosoma without small processes, its width 190 *K. hilaryi* sp. n.
13. IL 311-336, σ II 30-40, WTaIV 42-50, 2 pairs of adanal setae placed on adanal suckers level *K. leopoldi* sp. n.
- IL 336-362, σ II 24-32, WTaIV 50-54, 2 pairs of adanal setae placed between genital apparatus and adanal suckers
..... *K. cameronicus* sp. n.

Key to the species of the genus *Kamerucoptes* Haitlinger, 2002 (females)

1. TaI > 90, TaIV > 100 *K. tanzanicus* sp. n.
- TaI < 90, TaIV < 100 2.
2. ϕ I > 220, ϕ IV > 240 *K. sibuticus* Haitlinger, 2002
- ϕ I < 220, ϕ IV < 240 3.
3. ϕ I and ϕ II < 150, ϕ IV < 170
..... *K. doubeicus* Haitlinger, 2002
- ϕ I and ϕ II > 150, ϕ IV > 170 4.
4. σ I > 48 5.
- σ I < 48 7.
5. σ I 58-62, TaIII 80-84, TaIV 94-100
..... *K. tsaratananaicus* Haitlinger, 2002
- σ I 50-58, TaIII 78-80, TaIV 80-90 6.
6. σ I 50-54, σ II 28-30. WTiIV 32-38, opisthosoma relatively long and wide *K. cameroonius* sp. n.
- σ I 56-58, σ II 40, WTiIV 38-40, opisthosoma very short, narrow *K. leopoldi* sp. n.
7. Dorsal surface of idiosoma with striae only in posterior part of *K. libengicus* sp. n.
- Dorsal surface of idiosoma with longitudinal and transverse striae covered $\frac{1}{2}$ of their area 8.
8. ϕ IV 220-224, WTaI 28-30, WTaIV 28-30, WTiIV 38-40 *K. nigericus* sp. n.
- ϕ IV 194-200, WTaI 22-24, WTaIV 20-24, WTiIV 32-34 *K. hilaryi* sp. n.

List of hosts for heterocoptids mites from Africa

1. *Kamerucoptes doubeicus* Haitlinger, 2002: *Aspidomorpha obovata* (Klug, 1835)
2. *K. ruvenzoricus* Haitlinger, 2002: *Aspidomorpha dissentanea* Boheman, 1862
3. *K. lycius* Haitlinger, 2002: undetermined Lycidae – accidental host
4. *K. sibuticus* Haitlinger, 2002: *Lacoptera murrayi* Boheman, 1862
5. *K. tsaratananaicus* Haitlinger, 2002: *Cassida pretiosa* Borowiec, 1988, *Cassida rugipennis* (Boheman, 1855)
6. *K. libengicus* sp. n.: *Aspidomorpha togata* Thompson, 1858, *Chiridopsis aequinoctialis* (Olivier, 1808)
7. *K. tanzanicus* sp. n.: *Aspidomorpha ingens* Duvivier, 1891
8. *K. cameroonius* sp. n.: *Aspidomorpha chlorotica* (Olivier, 1808)
9. *K. barombicus* sp. n.: *Cassida inaequalis* Thomson, 1858
10. *K. hilaryi* sp. n.: *Aspidomorpha submutata* Weise, 1899
11. *K. nigericus* sp. n.: *Aspidomorpha fenestrata* (Olivier, 1808)
12. *K. leopoldi* sp. n.: *Aethiopocassis kraatzi* (Weise, 1898)
13. *K. guineas* sp. n.: *Aspidomorpha isparetta* Boheman, 1854
14. *K. bazylii* sp. n.: *Conchyloctenia punctata* (Fabricius, 1787)
15. *Gascaricoptes analevelonaicus* Haitlinger, 2002: *Cassida fuscomacula* Borowiec, 1988
16. *Conchyloptes tangaicus* Haitlinger, 2002: *Conchyloctenia hybrida* (Boheman, 1854)
17. *Erotylocytes linodesmus* Fain, 1987: *Linodesmus coccus apicalis* (Erotylidae) – accidental host
18. *E. anthophora* Fain, 1987: *Anthophora acraensis* (Apidae) – accidental host
19. *E. huluensis* Fain, 1987: *Chlorion (Isodontia) simoni* (Sphecidae) – accidental host
20. *E. helenae* Haitlinger, 1996: *Lacoptera rugosicollis* (Spaeth, 1902), *Lacoptera corrugata* (Sahlberg, 1823), *Lacoptera weisei* (Spaeth, 1902), *Lacoptera aurosa* Fairmaire, 1891, *Basipta stolidia* Boheman, 1854
21. *E. taorettae* Haitlinger, 1996: *Lacoptera aurosa* Fairmaire, 1891
22. *E. verenae* Haitlinger, 1996: *Lacoptera caduca* Borowiec, 1994

Table I. Metric data for *Kamerucoptes libengicus* sp. n. (1) and *Kamerucoptes tanzanicus* sp. n. (2); H –holotype, P – paratypes

	1	1	1	2	2	2
	H	P	P	H	P	P
	♂	♂	♀	♂	♂	♀
IL	387	349-400	426-457	387	344-381	432-457
IW	380	324-374	349-368	413	336-406	355-394
vi	32	38		32	30-36	30-36
G	32	36-44		42	40-48	
TaI	80	70-78	72-76	102	92-100	102-106
TaII	78	70-76	72-80	102	94-102	100-104
TaIII	78	70-78	78-82	102	94-102	104-110
TaIV	82	72-84	86-88	102	96-104	110-112
φI	192	174-190	182-186	224	212-242	230
φII	194	172-194	184-186	226	228-282	240
φIII	204	190-208	208-210	286	266-300	254-264
φIV	210	186-224	210-226	280	232-264	
σI	36	40-44	40-46	54	50-58	54
σII	20	18-24	24-26	30	28-38	34
σIII	30	36-40	36-40	42	32-46	30-50
WTaI	36	30-36	32-34	24	22-24	22-24
WTaIV	56	48-54	32-34	28	28-32	24
WTiIV	60	50-58	38-42	42	34-42	30-32
ads	30	28-34		48	36-48	

Table II. Metric data for *Kamerucoptes cameronicus* sp. n. (1) and *Kamerucoptes barombicus* sp. n. (2).

	1	1	1	2	2
	H ♂	P ♂	P ♀	H ♂	P ♂
IL	362	336-355	438-469	355	362-396
IW	343	297-336	343-400	336	345-387
vi		28-32	30	22	
G	36	44		40	40-44
TaI	66	70-72	78-84	70	66-70
TaII	68	70-74	80-82	70	70-72
TaIII	70	72	78-80	70	70-74
TaIV	64	62-64	80-90	68	68-70
φI	178	182-190	192	132	136-140
φII	186	178-192	184	130	140-144
φIII	186	186-204	182	144	146-152
φIV	-	192-196	188-194	140	150-160
σI	52	48-54	50-54	54	52-54
σII	24	26-32	28-30	32	26-38
σIII	34	40	34-40	50	42-52
WTaI	30	28-30	26-28	32	30-32
WTaIV	50	52-54	26-28	46	50-52
WTiIV	60	56-64	32-38	54	56-58
ads	44	36-50		34	32-48

Table III. Metric data for *Kamerucoptes hilaryi* sp. n. (1), *Kamerucoptes nigericus* sp. n. (2) and *Kamerucoptes leopoldi* sp. n. (3)

	1	1	2	2	3	3	3
	H ♂	P ♀	H ♂	P ♀	H ♂	P ♂	P ♀
IL	362	432-451	349	425-482	336	311-336	450-463
IW	374	355-382	349	330-380	330	311-349	336
vi	?	32-34	34	32-40	30	30-32	30-32
G	46		48		42	38-46	
TaI	66	72-78	70	80	66	62-68	74
TaII	68	74-80	72	80	72	70	82
TaIII	74	78-82	72	80	70	70-72	78
TaIV	80	84-90	78	90	64	64-68	90
φI	164	172-186	180	184-194	180	174-190	182-186
φII	180	198-204	190	-	190	180-188	182
φIII	200	210	190	210-232	200	186-192	-
φIV	196	194-200	210	220-224	196	186-192	186-192
σI	40	38-44	40	40-42	60	50-60	56-58
σII	20	28-30	26	22-24	40	30-40	40
σIII	36	36-40	38	38-40	52	38-48	-
WTaI	26	22-24	28	28-30	26	26-28	26-28
WTaIV	42	20-24	40	28-30	50	42-46	26-30
WTiIV	58	32-34	44	38-40	58	44-54	38-40
ads	30		34		40	32-44	

Table IV. Metric data for *Kamerucoptes guineus* sp. n. (1), *Kamerucoptes bazylii* sp. n. (2) and *Kamerucoptes sibuticus* Haitlinger, 2002 (3)

	1	1	1	2	3	3	3
	H	P	P	H	H	♂	♀
	♂	♂	♀	♂	♂		
IL	400	413	451	444	411	311-355	413-438
IW	393	387	362	381	394	273-330	374-413
vi	?	30	?	?	36	26-32	28-36
G	42	42		48	40	36-48	
TaI	80	80	80	70	60	62-66	66-70
TaII	84	80	84	72	68	64-72	72-76
TaIII	84	80	86	72	74	70-74	78-82
TaIV	68	68	-	68	84	72-76	78-84
φI	166	-	-	164	144	150-164	150-174
φII	174	166	170	172	214	216-240	222-260
φIII	180	184	184	-	224	234-264	230-284
φIV	-	186	-	180	260	244-274	254-298
σI	-	-	56	40	34	30-40	38-50
σII	30	-	28	20	18	18-22	24-26
σIII	44	-	-	34	-	28-30	32-40
WTaI	30	28	30	24	22	16-24	24
WTaIV	50	54	-	54	24	18-28	24-30
WTiIV	60	60	-	58	34	22-34	34-40
ads	54	50		44	16	14-24	

Table V. Metric data for *Erotylocoptes helenae* Haitlinger, 1996 (1) and *Kamerucoptes tsaratananaicus* Haitlinger, 2002 (2).

	1	1	1	2
	H	K		
	♂	♂	♀	♀
IL	500	476-495	413-488	459-508
IW	368	336-381	349-416	336-406
vi	38	28-36	40-42	24-28
G	46	40-44		
TaI	70	74-76	72-82	74-76
TaII	82	82-86	78-86	74-80
TaIII	106	94-100	86-100	80-84
TaIV	114	106-112	96-104	92-100
φI	162	144-170	150-170	164-170
φII	236	200-232	200-226	160-180
φIII	240	214-224	212-234	164-174
φIV	260	212-252	240-262	190-194
σI	26	22-26	26-38	58-62
σII	-	16-20	18	36-38
σIII	-	22-24	18-20	54-58

