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## *Afrotizea* gen. nov. from tropical Africa

(Coleoptera: Chrysomelidae: Galerucinae)\*

HEIDI STAPEL and THOMAS WAGNER

With 11 figures

\*9. Contribution to the taxonomy and phylogeny of Afrotropical Galerucinae.

### Summary

*Candezea masbuana* JACOBY, 1895 (= *Candezea annulicornis* JACOBY, 1906; syn. nov.) is phylogenetically not closely related to *Candezea* CHAPUIS, 1879, *Monolepta* CHEVROLAT, 1837, or *Afrocrania* HINCKES, 1949, and herein transferred to *Afrotizea* gen. nov. with is subsequently described and figured. *Afrotizea masbuana* (JACOBY, 1895) is type species by monotypy.

### Key words

Africa, Chrysomelidae, Galerucinae, taxonomy, new name, new genus

### Zusammenfassung

Im Rahmen einer umfangreichen Revision afrotropischer Galerucinae, die im letzten Katalog als "Monoleptites" (WILCOX 1973) zusammengefasst wurden, fanden sich viele Arten, die phylogenetisch nicht eng mit den bisher beschriebenen Gattungen *Candezea* CHAPUIS, 1879, *Monolepta* CHEVROLAT, 1837 oder *Afrocrania* HINCKES, 1949 verwandt sind. Eine dieser Arten ist *Candezea masbuana* JACOBY, 1895 (= *Candezea annulicornis* JACOBY, 1906; syn. nov.), für die hier *Afrotizea* gen. nov. aufgestellt und beschrieben wird. Typusart ist *Afrotizea masbuana* (JACOBY, 1895), verfügbares Museumsmaterial wurde ausgewertet, die Art wird neu beschrieben und die bekannte Verbreitung in einer Karte dargestellt.

## 1. Introduction

Galerucinae with slender legs, basi-metatarsus much longer than the remaining four metatarsal articles, and without significant pronotal depressions are assigned to the „Sectio Monoleptites“ sensu WILCOX (1973). The classification and the taxonomic status of the whole group is very unsatisfactory, and a revision of the Afrotropical species was started recently (cf. WAGNER 1999). Studies on the species rich taxa *Monolepta* CHEVROLAT, 1837, *Afrocrania* HINCKES, 1949 and *Candezea* CHAPUIS, 1879 reveal that there are several species which need to be transferred to other taxa according to their phylogenetical position.

Herein, we revised material of *Candezea mashuana* JACOBY, 1895 and found *Candezea annulicornis* JACOBY, 1906 as junior synonym. This species is transferred to *Afrotizea* gen. nov. and is genotype by monotypy. The detailed examination of external and especially the genitalic characters emphasizes the generic delimitation to other monophyletic groups.

## 2. Material and methods

A set of figures including external and genitalic characters is given. Morphometric measurements were carried out for external characters; each seven males and females were measured. Absolute measurements are: Total length from clypeus to apex of elytron, length of elytron, width of both elytra, and width of pronotum. Relative measurements are: Length to width of pronotum, maximal width of both elytra to length of elytron, length of antennal articles 2 to 3, length of articles 3 to 4, and length of basi-metatarsus to length of metatibia.

Specimens examined were located in the following collections: The Natural History Museum, London (BMNH; S. SHUTE, M. COX; n = 55); Hope Entomological Collection, Oxford (HECO; G. MCGAVIN; n = 2); Institut Royal des Sciences Naturelle de Belgique, Brussels (IRSNB; M. CLUDTS; n = 7); Musée National d'Histoire Naturelle, Paris (MNHN; N. BERTI; n = 36); Museum für Naturkunde der Humboldt Universität, Berlin (MNHU; H. WENDT; n = 11); Musée Royal d'Afrique Centrale, Tervuren (MRAC; M. DE MEYER; n = 30); Naturkundemuseum Erfurt (NME; M. HARTMANN; n = 7); National Museums of Kenya, Nairobi (NMK; K. MAES, M. MUNGAI; n = 3); Transvaal Museum of Natural History (TSMA; S. ENDRÖDY-YOUNGA; n = 1) collection R. BEENEN, Nieuwegein (CBe; n = 9).

We thank all colleagues who made material available to us.

## 3. Description of *Afrotizea* gen. nov.

### Etymology

Combination of Africa, tibiae (which are sharply contrasting black to the femora) and *Candezea*, the name of the genus where the type-species was originally described.

**Type species:** *Afrotizea mashuana* (JACOBY, 1895)

= *Candezea mashuana* JACOBY, 1895

= *Candezea annulicornis* JACOBY, 1906; syn. nov.

### Type material

Holotype, *Candezea mashuana*: ♀ "Mashunald. Salisbury; Jacoby coll. 1909-28a" (BMNH); examined. Holotype, *Candezea annulicornis*: ♀ "Bradshaw, Zambesi, 1878, Geschenk v. Uhlsen 1881" (BMNH); examined.

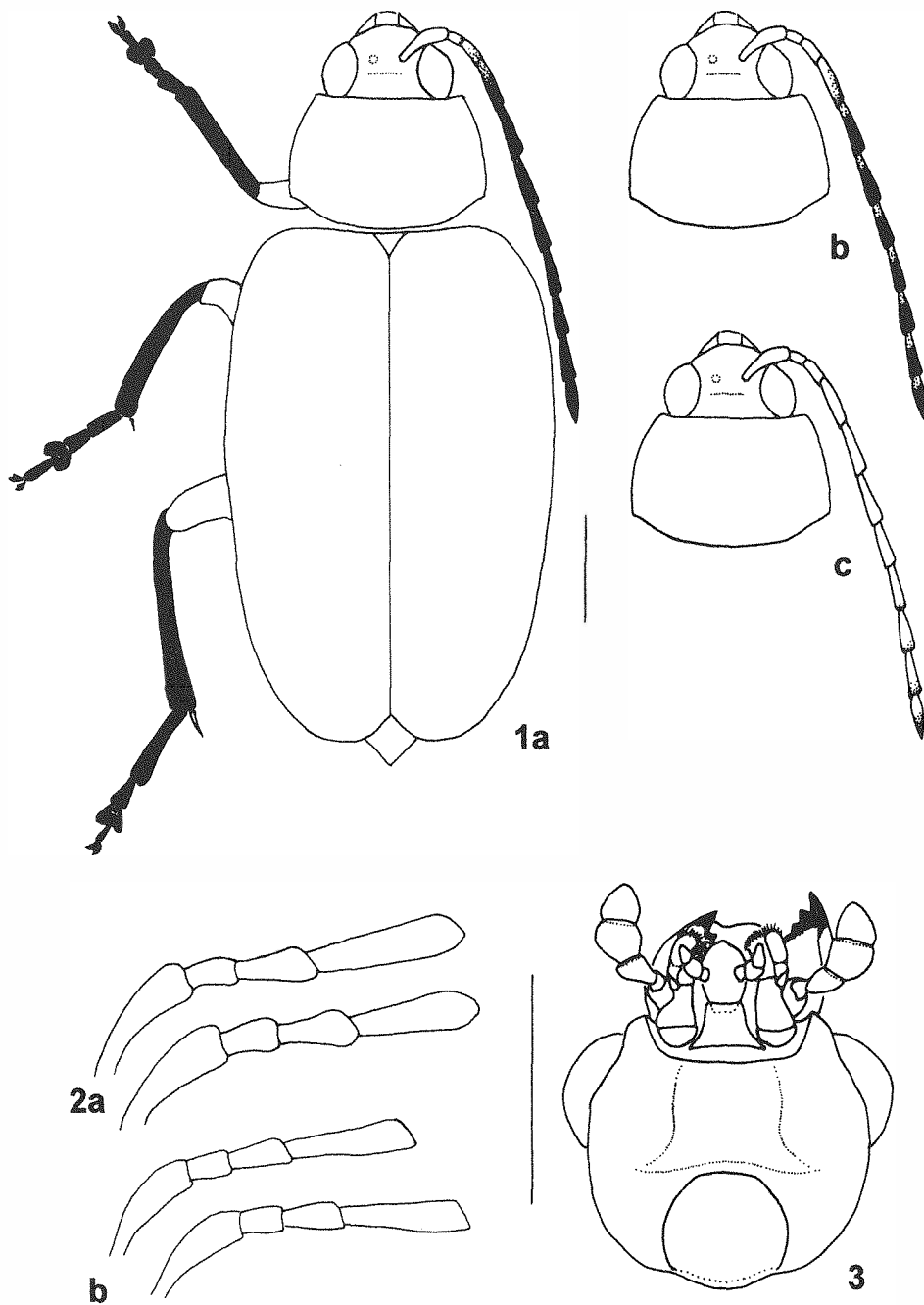
**Other material examined**

**Angola:** 1, Duque de Braganca Falls, III.1972 (BMNH). - **Burundi:** 2, Kanna, 5.15N/28.30E, I.1926, H. SCHOUTEDEN (MRAC); 9, Prov. Cibitoke, II.1989, C. J. M. BERGER (6 Coll. Beenen, 3 ZFMK). - **Con- go:** 3, Moliro, 8.11S/30.31E, V.1895, J. DUVIVIER (IRSNB); 6, 150-200 miles W. of Kambove, 3,500-4,500 ft, 10.50S/24.00E, X.1907, S. A. NEAVE (BMNH); 1, Sankisia, 9.24S/25.48E, IX.1911, BEQUAERT (MRAC); 6, Elisabethville, 11.40S/27.28E, XI.1911, Miss. Agric., 1935, RICHARD (MRAC); 6, Kapiri, 9.42S/27.13E, X.1912, Miss. Agric.(MRAC); 1, Uvira, 3.24S/29.08E, XII.1932, L. BURGEON (MRAC); 6, Kivu: Luvungi, 2.52S/29.02E, XII.1932, L. BURGEON (MRAC); 1, Kibali-Ituri: Geti, 1.13N/30.12E, 1934, Ch. SCOPS (MRAC); 1, Région d'Abok, X.1935, SCOPS (MRAC); 1, Mahagi-Niarembe, 2.15N/31.07E, 1935, Ch. SCOPS (MRAC); 2, Usumbura, 3.22S/29.21E, 1936, A. BECQUET (MRAC); 1, Lac Kivu: SW-Tshibinda, 2.19S/28.45E, IV.1938, J. GHESQUIÈRE (MRAC); 4, Musosa, 1939, H. J. BREDO (IRSNB). - **Kenya:** 1, Upper Kuja Valley, S. Kavirondo, 4,200ft, 1.00S/35.00E, V.1911, S. A. NEAVE (BMNH); 1, Kisumu K. C., 0.03S/34.47E, IV.1936, H. J. A. TURNER (NMK). - **Malawi:** 1, Vy. of S. Rukuru R., 3,000 ft, 10.30S/33.30E, VI.1910, S. A. NEAVE (BMNH). - **Mozambique:** 1, Vallée du Revoué, Env. D'Andrada 18.52S/32.54E, 1905, G. VASSE (MNHN); 1, Vallée du Pungoué, Guengère, 33.30S/18.50E, 1906, G. VASSE (MNHN) 29, Vila Pery, XI.1928, P. LESNE (MNHN). - **South Africa:** 1, Zoutpansberg: Shilouvane (Junod), 30.30S/23.10E, Coll. CLAVAREAU (MRAC); 1, Mpudzi R., IX.1905, G. A. K. MARSHALL (BMNH); 2, Zoutpansberg, Mp'hôme, XII.1901, M. KNOTHE (MNHU); 1, Pretoria, Waterkloof, 25.43S/28.11E, XII.1984, END-RÖDY-YOUNGA (TSMa). - **Sudan:** 4, Kaya, Lado Dist., 5.10N/31.32E, VII.1912, R. OBERTHUR (MNHN). - **Tanzania:** 3, Kosi, Uvinsa, 5.08S/30.23E, X.1899, GLAUBING (MNHU); 1, Uha, 4.00S/31.00E, X.1912 (MNHU); 2, L. Rukwa, 3,700 ft, 8.00S/32.20E, D. G. MACINNESS (1 BMNH, 1 NMK); 1, Ugogo, 6.10S/35.40E, v. BERINGER & JOST (MNHU); 1, Tendaguru, Lindi, 10.00S/39.41E, I.1910, Janensch (MNHU); 1, Mikesse, Bezirk Morogoro, W. Janensch, 6.49S/37.40E (MNHU); 1, Tendaguru, VII.1913, REELL (MNHU). - **Uganda:** 11, between Jinja & Busia or Mbwago's, E. Busoga, 3,800-4,000 ft, 0.28N/33.39E, VIII.1911, S. A. NEAVE (BMNH); 2, Siroko River, near W. foot of Mt.Elgon 3600 ft, 1.20N/34.2E, VIII.1911, S. A. NEAVE (BMNH); 1, between Kumi & N. E. shore L. Kioga, 3,400-3,600 ft, 1.35N/33.42E, VIII.1911, S. A. NEAVE (BMNH); 1, Banks of Nile near Kakindu, 3,400 ft, VIII.1911, S. A. NEAVE (BMNH); 1, Western Ankole, 4,500-5,000 ft, 0.50S/30.00E, X.1911, S. A. NEAVE (BMNH); 1, Kaliro, 0.54N/33.30E, II.1924, H. HARGREAVES (NMK); 1, Bugiri, 1400 m, savene boisée, 0.34N/33.46E, VIII.1957, BASI-LEWSKY & LELEUP (MRAC). - **Zambia:** 1, Bodong, J. WEISE (MNHU); 1, Sambesi, 17.00S/23.50E, F. SEINER (MNHU); 1, Vallée du Muza 1000-1120m, 18.00S/32.00E, 1905, G. VASSE (MNHN); 1, East Loangwa Dist., 2400 ft, Petauke, 14.16S/31.21E, I.1905, S. A. NEAVE (HECO); 1, Lofu River, 3500 ft, 9.00S/30.20E, VIII.1908, S. A. NEAVE (HECO). - **Zimbabwe:** 1, Mashonaland, 6 miles E. of Odzi R., 18.50S/32.15E, X.1897, G. A. K. MARSHALL (BMNH); 12, Lesapi River, Mashonaland, 19.00S/31.30E, XI.1897, G. A. K. MARSHALL (BMNH); 14, Salisbury, Mashonaland, 17.43S/31.05E, X.1893, IV.1897, X.1897, II.1898, XI.1898, G. A. K. MARSHALL (BMNH); 5, NE-Zimbabwe, Umgebung Kotwa, Broken Causeway, 17.03S/32.45E, VIII.1986, Driftnetz, M. LILLIG & S. POTEI (NME); 2, Hwange NP, III.1999, St. ROTH (NME).

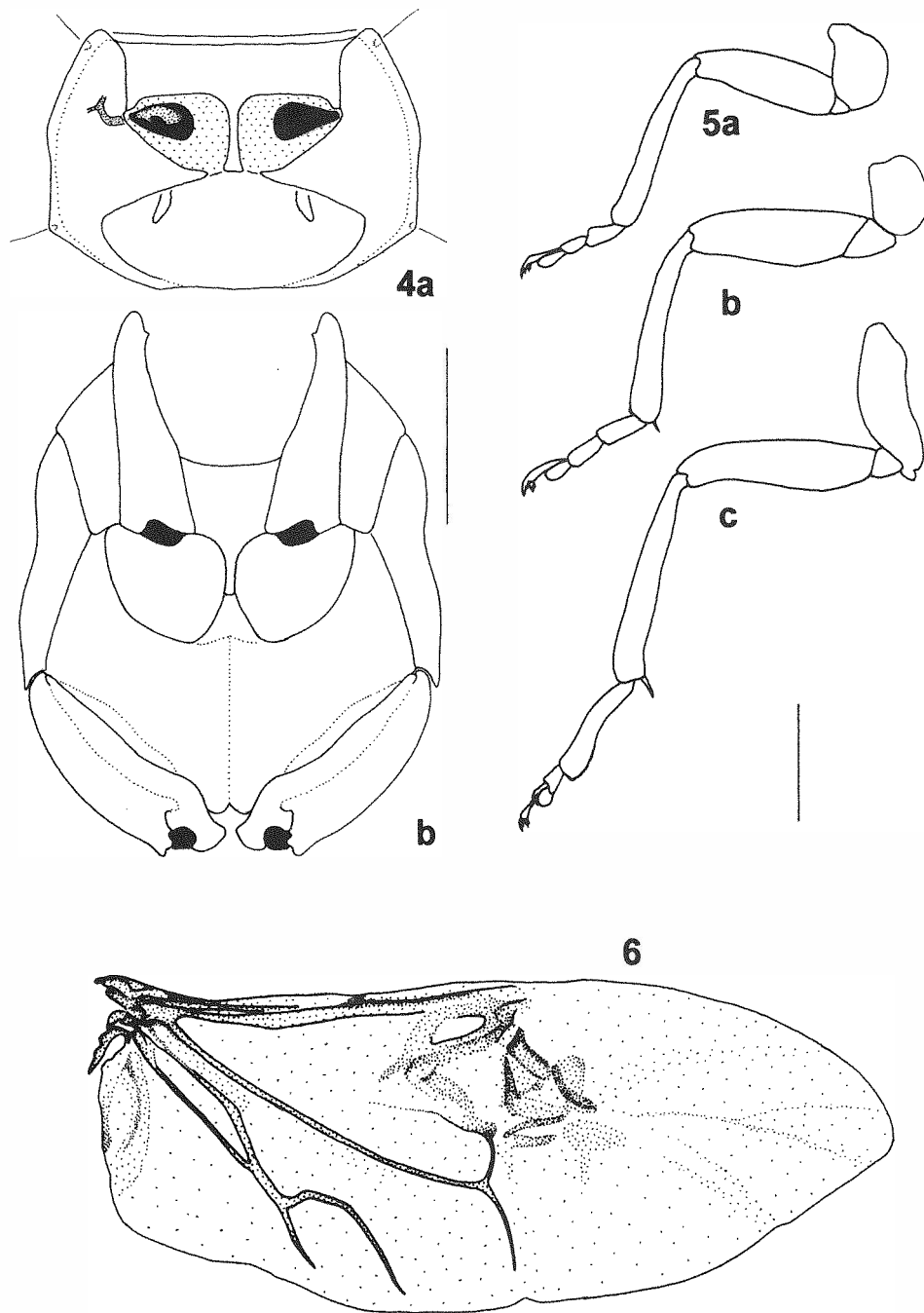
**Total length:** 5.90-7.10 mm (mean: 6.30 mm).

**Head:** Entirely pale yellow. Eyes convex and ovate (Fig. 1). Antennae rarely entirely yellow and last four articles brownish at apex (Fig. 1c). Most specimens examined with fifth to eleventh article annulate, yellowish brown proximally and black distally (Fig. 1b), rarely last antennal articles more black (Fig. 1a). Length of antennal article 2 to 3: 0.53-0.71 (mean: 0.64); length of antennal article 3 to 4: 0.48-0.62 (mean: 0.55; Fig. 2). Antennal articles in males slightly broader (Fig. 2a) than in females (Fig. 2b). Last two articles of the maxillary palps strongly enlarged (Fig. 3).

**Thorax:** Pronotum nearly rectangular, slightly narrowed anteriorly, very finely punctured, shining. Pronotal width: 1.70-2.20 mm (mean: 1.99 mm), pronotal length to pronotal width: 0.66-0.72 (mean: 0.68). Prosternal process slender, prothoracic coxal cavities slightly open behind (Fig. 4a). Thorax including scutellum, elytra, coxae, trochantera and femora pale yellow or pale brownish yellow, tibiae and tarsi sharply contrasting dark



**Fig. 1:** Habitus of *Afrotizea mashuana* (JACOBY, 1895): **a:** with predominantly black antennal articles; **b, c:** Variation in antennal coloration pattern. **Fig. 2:** Basal four antennal articles: **a:** two different females; **b:** two different males. **Fig. 3:** Head, ventral view including mouth parts. Scale bar: each 1 mm for Fig. 1 and for Fig. 2, 3.



**Fig. 4:** Thorax, ventral view; **a:** prothorax, coxal cavities shaded, coxal openings black, trochantinus only at right coxa dot-shaded; **b:** meso- and metathorax, coxal openings black. **Fig. 5:** Legs; **a:** prothoracic, **b:** mesothoracic, **c:** metathoracic. **Fig. 6:** Hindwing. Scale bar: each 1 mm for Fig. 4 and for Fig. 5-6.

brown or black (Fig. 1a). Basi-metatarsus about double as long as metatarsus articles 2 and 3 (Fig. 5c), length of basi-metatarsus to length of metatibia: 0.39-0.46 (mean: 0.42). Scutellum small, triangular. Elytra elongated, sub-ovate, slightly broader in the basal half, much coarser punctured and duller than pronotum. Elytral length: 4.40-5.80 mm (mean: 4.94 mm), maximum width of both elytra: 2.40-3.90 mm (mean: 3.34 mm); maximal width of both elytra to length of elytron: 0.62-0.74 (mean: 0.68). Mesosternum medially longer than wide anteriorly, mesepisternum very slender (Fig. 4b). Alae fully developed, wing venation like Fig. 6.

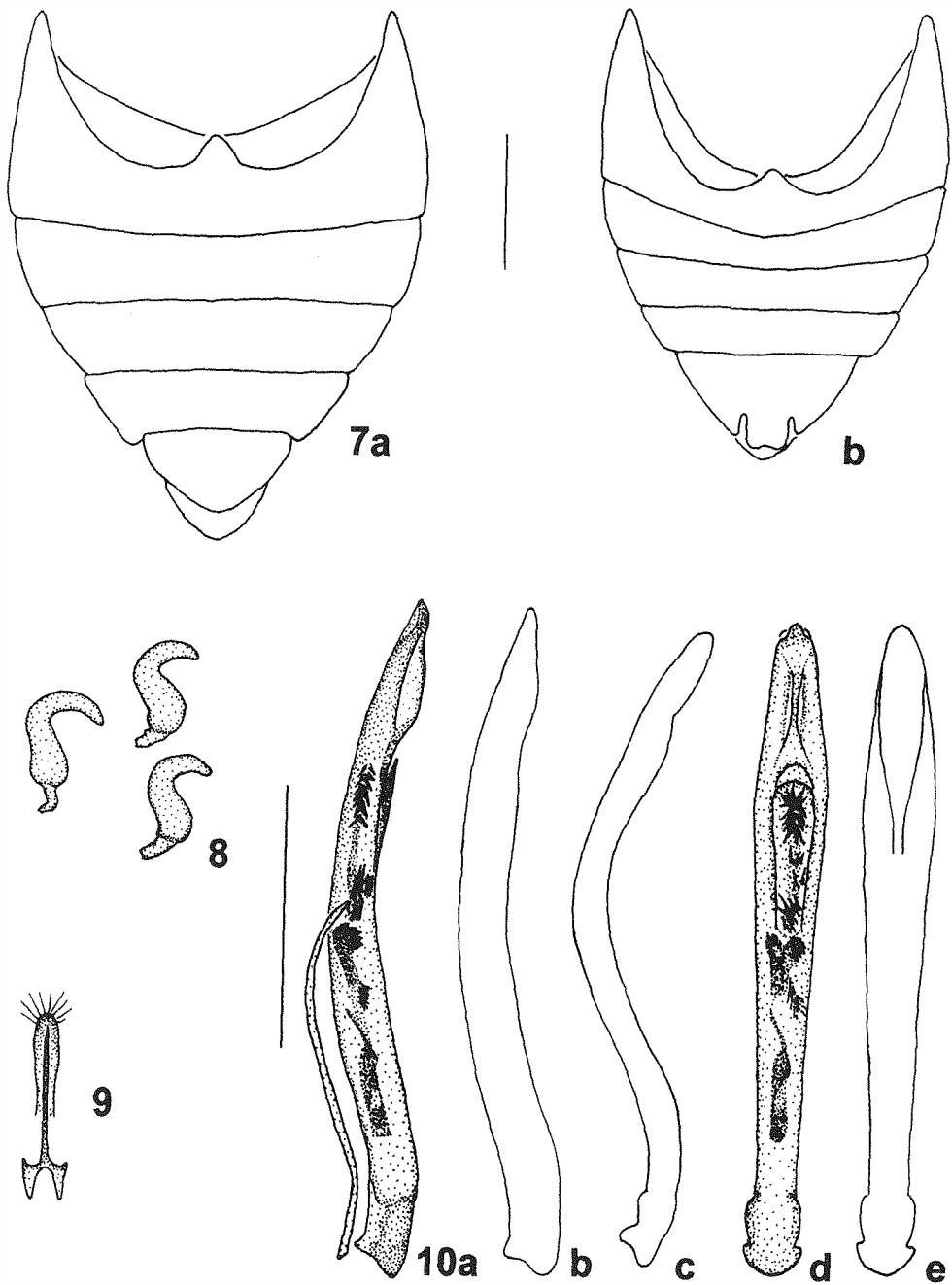
**Abdomen:** Entirely pale yellow. Last visible sternite in males with incisions at both sides and shallow incision in the middle (Fig. 7b). Female abdomen without incisions at apex (Fig. 7a).

**Female genitalia:** Spermatheca weakly sclerotized with short cornu and insignificant enlarged nodulus (Fig. 8). Bursa sclerites are insignificantly sclerotized. Vaginal palps as in Fig. 9.

**Male genitalia:** Median lobe symmetrically, elongated, very slender. In lateral view moderately (Fig. 10a, b) or rarely strongly bended (Fig. 10c). Median lobe slightly enlarged in the apical half in dorsal view (Fig. 10d), apex not incised, insignificantly pointed and dorsally carinate (Fig. 10a, d). Tectum short, spatula-like, slightly enlarged at apex and also not incised, apical part of median lobe in ventral view with groove; orifice ovate, small (Fig. 10d). Endophallic structures with asymmetrically arranged short spiculae and spines of peculiar type (Fig. 10a, d). Tegmum very long, slender, bended, attached in middle of the median lobe (Fig. 10a).

### Diagnosis

*Afrotizea* gen. nov. are comparatively large, dorsoventrally stronger compressed Galerucinae without pronotal depressions or elytral extrusions. Coloration, enlarged basi-metatarsus, nearly rectangular prothorax with open coxal cavities, and slender antennal articles with third article somewhat longer than second make a close relationship to *Candezeia*, *Afrocrania* or *Monolepta* probable. In comparison to *Candezeia*, *Afrotizea* gen. nov. is much more dorsoventrally compressed, has the elytra slightly narrowed towards the apex, and has a much narrower pronotum (pronotal length to width on average: 0.68; in *Candezeia* (average of different species): 0.46-0.57). *Afrocrania* has the pronotum significantly narrowed at base, the pronotum is usually broader (pronotal length to width: 0.59-0.67), the elytra are much more elongated (elytral length to width of both elytra: 0.57-0.65; in *Afrotizea* gen. nov.: 0.68). *Monolepta* are usually much smaller than *Afrotizea* gen. nov. (total length, average of different species: 3.00-7.50 mm), antennal article 2 and 3 are approximately of same length (in *Monolepta*: 0.85-1.10; 0.64 in *Afrotizea* gen. nov.). Both genera show no significant sexual dimorphic pattern, while *Candezeia*, and especially *Afrocrania* have sexual dimorphic characters on the elytra, or on the head and antennae. The strongly enlarged, bulb-like last articles of the maxillary palps are a very characteristic pattern of *Afrotizea* gen. nov., while species of the other genera have much more elongated articles of the maxillary palps.



**Fig. 7:** Abdomen, ventral view; **a:** female; **b:** male. **Fig. 8:** Three different spermathecae. **Fig. 9:** Vaginal palps. **Fig. 10:** Median lobe; **a-c:** lateral view, **a** with endophallic structures; **d:** dorsal view with endophallic structures; **e:** ventral view. Scale bar: each 1 mm for Fig. 7 and for Fig. 8-10.

Strong differences, and main reason describing this new genus, are found in the genitalic characters: Shape of the median lobe in *Candezea*, *Afrocrania* and *Monolepta* is very different from *Afrotizea* gen. nov. (cf. WAGNER 1999, 2000, MIDDELHAUVE & WAGNER in press). Furthermore, these groups have symmetrically arranged endophallic structures of genera-typic shape and size, very different from the asymmetrically arranged structures in *Afrotizea* gen. nov. Also female genitalic characters are strongly different. The other named genera have spermathecae with long, slender cornu, and significantly enlarged nodulus. They are characterized by group-specific strongly sclerotized bursa sclerites which are very weakly sclerotized and hardly visible in *Afrotizea* gen. nov.

#### 4. Known species of *Afrotizea* gen. nov.

**Only known species:** *Afrotizea mashuana* (JACOBY, 1895)

**Description:** Like description of *Afrotizea* gen. nov.

**Distribution:** Known mainly from savannas in Southern and Eastern Africa from Northern Congo, Southern Sudan and Kenya to Angola and South Africa.

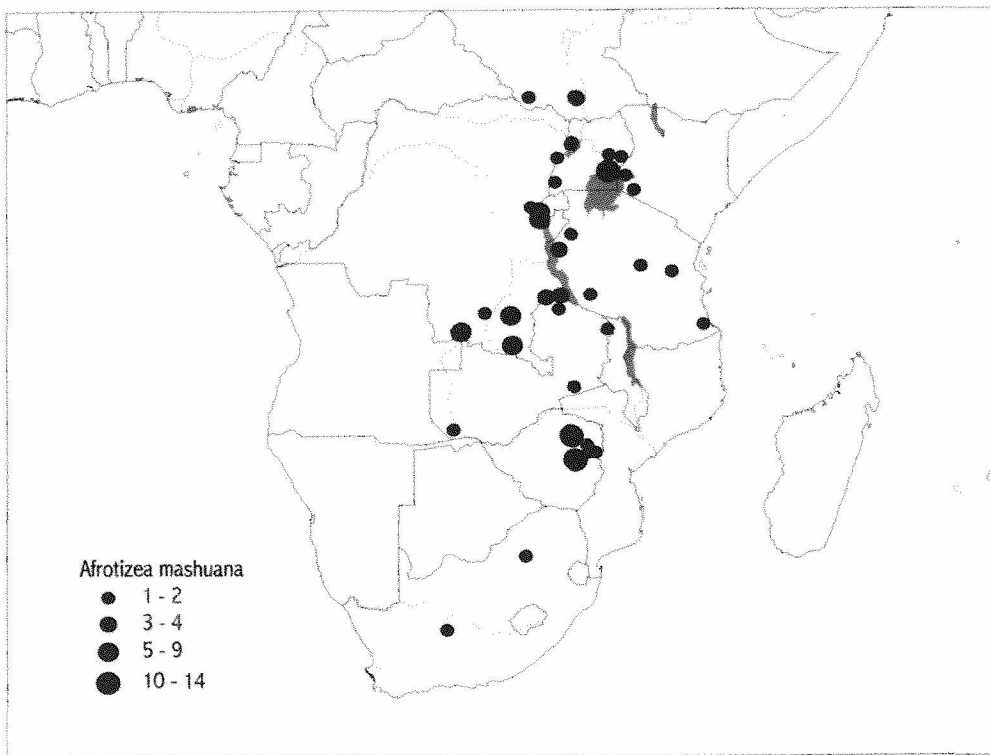


Fig. 11: Known distribution of *Afrotizea mashuana* (JACOBY, 1895)



**Similar species:** There are some other Galerucinae with pale yellow coloration and sharply contrasting black tibiae and tarsi especially distributed in Southern Africa. Two of them are also described in *Candezea* and are characterized by elongated basi-metatarsi, but are not closely related to either *Candezea* or *Afrotizea* gen. nov. They also need to be transferred to other monophyletic groups. These are *Candezea oneili* JACOBY, 1900, and *Candezea parvicollis* JACOBY, 1906. Both species are much smaller than *Afrotizea mashuana*, and have very different genitalic characters. *Candezea oneili* has much shorter antennae and legs, *Candezea parvicollis* has a much more elongated basi-metatarsus, a bristly antennal pubescence, antennal article four to eleven is entirely black, the pronotum is much coarser punctured and has a shallow transverse depression.

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### Author's addresses:

HEIDI STAPEL  
 Zoologisches Forschungsinstitut und  
 Museum Alexander Koenig  
 Adenauerallee 160  
 D-53113 Bonn

### Corresponding author:

DR. THOMAS WAGNER  
 Universität Koblenz-Landau  
 Institut für Biologie  
 Rheinau 1  
 D-56075 Koblenz  
 e-mail: thwagner@uni-koblenz.de

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