Hyleina kaphetea, a new genus and species of clearwing moths from tropical Africa (Lepidoptera: Sesiidae: Sesiini)

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Abstract

A new species and genus of Sesiini, *Hyleina kaphetea* new gen. & new sp., from tropical Africa is described. The type series comprises twelve male specimens from the Democratic Republic of Congo, Malawi, Tanzania and Zambia. Female specimens and life history are unknown.

Zusammenfassung


Key words: Cossoidea, Democratic Republic of Congo, Malawi, Tanzania, Zambia

Introduction

The greatest global diversity of Sesiini genera (Sesiinae) could be found in the Afrotropical region. Currently 18 genera and 34 species are placed to this tribe (Pühringer & Kallies 2004, updated; De Prins & De Prins 2017). Though partly the taxa of this tribe have been recently revised from Madagascar (Bartsch 2009) and from southern Africa (Bartsch 2013, 2015), the knowledge of Sesiini from the tropical regions of sub-Saharan Africa remained very fragmentary. Only a few recent papers have dealt with this topic: Fischer (2006) described the monotypic genus *Afrokona*, which subsequently has been placed in Sesiini by Bartsch (2009). Pühringer and Sáfián (2011) described the genus *Barbasphecia*, which currently includes two species. Three other genera were transferred to Sesiini: *Callisphecia* Le Cerf, 1916 with two species (Pühringer & Kallies 2004); *Cicinnoscelis* Holland, 1893 and *Megalosphecia* Le Cerf, 1916 with three and two species respectively (Bartsch 2015). While studying the African tropical Sesiidae, the author noticed twelve male specimens assigned to Sesiini, which were found to belong to an unknown genus and species. Here, the description of these new taxa based on morphological characters is presented.

Material and methods

Locality data of the investigated specimens are given as on the label; collecting dates with months in abbreviated notation; supplementary information in square brackets. Morphological terminology follows Špatenka et al. (1999), and the terminology of wing venation follows Heppner & Duckworth (1981). Genitalia slides were made according to standard procedures (Robinson 1976).

Abbreviations. Iziko Museum of Cape town (formerly South African Museum) (SAMC); National Museum of Kenya, Nairobi (NMKE); Bavarian State Collection of Zoology (ZSM); State Museum of Natural History, Stuttgart (SMNS); private collections of Jonathan Ball (CJB), Josef de Freina (CJF), and Douglas Kroon (CDK).
**Hyleina** new genus

Type species: *Hyleina kaphetea* new sp., designated here.

**Etymology.** Ancient Greek: Hyle (=
forest, shrubbery), gender is feminine.

**Description.** Head: small; eyes large, nearly same width as frons; haustellum very short, weakly sclerotized
and in all probability non-functional; labial palpi rather long, regularly bent upwards, third palpomere straight, tip
reaching base of antenna, first and third palpomeres equal in length, second palpomere somewhat longer with
smooth scaling, first and second palpomeres ventrally long tufted, tufts distally tapering; frons smooth; antennae
about half as long as forewing, clavate, serrate, ciliate, serration and ciliae distally tapering.

Thorax: legs long and narrow, hind legs longer than abdomen; predominantly smoothly scaled, except for
foreleg, which has tufted scales on femur ventrally and tibia laterally as well as mid- and hind leg which have
raised scales on tibia dorsally and distally. Wings narrow; discal cell of forewing with narrow, longitudinal scale
line indicating position of median vein; wing venation (Fig. 9): forewing with radial veins arising near cell apex,
long common stalk of R4 and R5, origin of M1 and M2 approximated; hind wing with M2 arising from costal third
of cross vein, short stalk of M3 and CuA1, reduced anal veins.

Abdomen: slender; basal segments slightly wasp-waisted, narrowest at segment two; anal tuft absent. Sternite
8 posteriorly with wide u-shaped emargination (Fig. 8c).

Male genitalia (Figs 7–8): tegumen and uncus very slender, membranous joined together; uncus bilobed;
gnathos bipartite. Valva short and broad, without crista sacculi; inner surface except for sub-ventral part barely
covered with short, hair-like setae; apically with area of strongly sclerotized, thorn-like setae; dorsally with high
specialized, long, distally extremely broad, multifurcate setae. Saccus present. Juxta very shortly protruded; manica
except for ventral part densely covered with sclerotized teeth. Phallus short; coecum penis present; vesica slightly
enlarged proximally.

**Diagnosis.** Within Sesiini *Hyleina* can be defined by the unique combination of the following characters:

1. antennae rather short (distinctly longer in most Sesiini genera);
2. basal part of abdomen wasp-waisted (absent in most Sesiini);
3. discal cell of forewing with distinct longitudinal scale line indicating position of median vein (lacking or
short and distally in most Sesiini);
4. venation of forewing with approximated origin of radial veins including the long common stalk of R4 and
R5 as well as approximated origin of M1 and M2; hind wing with short stalk of M3 and CuA1, and reduced anal
veins (Fig. 9);
5. male genitalia with tegumen-uncus-complex long and slender with unique, extremely long, bipartite
gnathos (tegumen-uncus-complex usually broader and more compact, gnathos shorter and more compact, often
asymmetric, rarely bipartite in other Sesiini genera);
6. uncus ventro-laterally without strong sclerotized setae (present in most Sesiini);
7. valva pentagonal, inner surface dorsally with extremely broad, multifurcate setae (valva straight in most
other Sesiini genera; medially angled in *Sesia* Clerck, 1759, setae of the valva simple or thorn-like in most Sesiini).

There may be a likelihood of confusion of *Hyleina* with *Sphecosesia* Hampson, 1910 from the Oriental region
and one species of *Cyanosesia* Gorbunov & Arita 1995 from the Australian region (see below). These three taxa
have similar, extremely modified, multifurcate setae of the valva, which may be regarded as a synapomorphic
character to show their relationship. This hypothesis needs further studies to be proved. Further common characters
of *Sphecosesia* and *Hyleina* are the short, ciliate antennae and the wasp-like waist of the abdomen. However,
*Hyleina* can be distinguished from *Sphecosesia* by the usually larger size, the reduced haustellum (developed in
*Sphecosesia*) and the approximated origin of some forewing veins (more regular in *Sphecosesia*), in the male
genitalia by the very different shapes of uncus (much larger and broader, laterally with multifurcate setae in
*Sphecosesia*), gnathos (short and simple in *Sphecosesia*), and valva (longer and narrower, trapezoid with almost
straight ventral margin in *Sphecosesia*) (see Kallies & Arita 2004).

*Cyanosesia leleji* Gorbunov & Arita, 2016 from Sulawesi shows some striking similarities with *Hyleina*: the
long and bipartite gnathos and the shape of the phallus, which lacks sclerotized processes. *Hyleina* can be
distinguished from this species by the reduced haustellum (well developed in *C. leleji*), the shape of the antenna
(longer and narrower, not serrate in *C. leleji*), the wasp-like waist of the abdomen (absent in *C. leleji*), the absent
anal tuft (present in *C. leleji*); in the male genitalia by the smaller uncus, the symmetric gnathos (asymmetric in *C. leleji*), and the very different shape of the valva with absent crista sacculi (longer and narrower, crista sacculi well developed in *C. leleji*).

The authors of *C. leleji* point out that this species differs from all congeners in several details (coloration of legs and abdomen, forewings, multifurcate scale-like not simple bristle-like setae of the valva in male, long and narrow signum of corpus bursae in female) and may represent a separate group within the genus (Gorbunov & Arita 1995). It differs further, as well as most other Sesiini species, from typical species of *Cyanosesia* by the distinctly longer forewing discal cell, with almost vertical cross-vein, located in the distal half of the wing (cross-vein conspicuously oblique, in the middle of the wing in typical *Cyanosesia*) and the normally proportioned hindwings (rather broad, apically shortened in typical *Cyanosesia*); in the male genitalia by the somewhat triangular shape of the valva (elongated, pentagonal to trapezoid in typical *Cyanosesia*), and the phallus with thorns or strong spines at tip of exo-phallus as well as at vesica (both without thorns or spines in typical *Cyanosesia*). On the basis of these characters the generic assignment of *C. leleji* appears questionable. The species may well be misplaced and represent a separate group within the Sesiini (see Gorbunov & Arita 1995, 2016, Kallies & Arita 2004).

**Distribution.** Southern parts of tropical Africa.

### Hyleina kaphetae new species

(Figs 1–3, 6, 7)

Holotype ♂ (Fig. 1): Zambia, East Province, Nyangombe, Savanna Biome, 14°14'59"S, 31°10'02"E, 1013m, 28.Dec.2010, A.J. Gardiner leg. (SAMC).

Paratypes: 1♂, Zambia, Northwest Province, vic. Ikelenge, Hillwood Farm, 01.Jan.2011, A.J. Gardiner leg. (CJB, later in SAMC) (Fig. 2); 1♂, same data as holotype (Bartsch gen. prep. 2016–51) (SMNS); 1♂, Zambia, Northwest Province, Zambezi Rapids, 11°07'34"S 24°11'29"E, 1213 m, 01.Jan.2011, A.J. Gardiner leg. (Fig. 3) (SMNS); 3♂, Malawi, Lilonga District, Dzalanyama Forest, 13°27'S, 33°39'E, 18.-21.Feb.2004, 1300 m (Fig. 4) (Bartsch gen. prep. 2017–08) (CDK); 1♂, Elisabethville [Congo, Katanga, Lubumbashi], Janvier 1937, Ch. Seydel (Fig. 5) (Bartsch gen. prep. 2006–02, Fig. 8) (ZSM); 1♂, Zambia, Western Province, street M 10 between Katima Mulilo and Mongu Silumba, 990 m, 21.Dec.2012, at light 19–20 h, 16°57.0'S, 23°52.3'E (CJF); 2♂, Mukuyu, Kigoma T. T. [Tanzania, Kigoma Territory, Mukuyu Hills east of Kabogo], Dec.1963, Japanese Primate Expedition (Bartsch gen. prep. 2008–15, Fig. 7); 1♂, same locality, Oct.1962 (Fig. 6) (Bartsch gen. prep. 2016–50) (NMKN).

**Etymology.** The name of this species derived from the ancient Greek word: kaphetēs = brownish.

**Description.** Head: Labial palpi pale grey with bright pearly gloss, tufted scales darker grey with light bluish gloss; frons smooth, pale grey with pearly gloss; scales of vertex short, slightly rough, pale grey; pericephalic scales pale grey, laterally white; antennae brown, distally blackish-grey, scape pale whitish-grey.

Thorax: pale brown-grey with pearly, ventrally more intensive bright purple gloss. Legs pale grey; fore leg with bright purple; mid and hind leg with whitish-pearly gloss; mid and hind femur dark grey, ventral edge whitish; spurs whitish. Wings with well developed transparent areas; veins, margins, discal spots and fringes as well as apical area of forewing brownish-grey; the latter consisting of longitudinal, wedge-shaped, basad pointing spots in venous interspaces; hindwing distally with similar but much smaller spots in venous interspaces.

Abdomen: pale brown-grey, tergites 1 and 2 somewhat darker, more brownish; anterior and posterior margin of tergite 1, as well as posterior margin of tergite 2 narrow black; anterior margin of tergite 2 indistinctly white.

Male genitalia (Figs 7–8): tegumen slightly bend ventrally; uncus about half as long as tegumen, lobes scarcely covered with hair-like setae; gnathos long, minutely bend distally. Valva with dorsal margin rather short and straight, distal margin long and straight, ventral margin long and arcuate, thus appearing pentagonal; apical area of thorn-like setae round-oval; area of multifurcate setae extend over dorsal half. Saccus narrow, relatively short. Phallus (Figs 7b, 8b) straight, about as long as valva; coecum penis bilobed, lobes latero-distally with a small appendage; vesica covered with numerous fine spines.

**Variation.** The species varies considerably in size with wingspan 21–30 mm, forewing length 9.5–14.0 mm, antenna 4.0–7.0 mm, body 9–17 mm, but only minutely in coloration as well as in extension of the transparent areas. One specimen from Zambia, Northwest Province, vic. Ikelenge and one from Malawi, Dzalanyama Forest.
has the whitish markings of the first abdominal segments more prominent and sternite 2 completely white (Fig. 2). The smallest specimen from Malawi, Dzalanyama Forest has apical area of forewings and distal margin of hindwings somewhat broader. Individual differences in shape of valva and number and arrangement of its setae may represent intra-specific variation, e.g. the specimen from Elisabethville has the apical area of thorn-like setae of the valva smaller and the tooth-like protrusion of its dorsal margin less distinct (Fig. 8).

**Distribution.** The Democratic Republic of Congo, Malawi, Tanzania and Zambia.

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A NEW GENUS AND SPECIES OF SESIIDAE


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