



A new genus and species of bee-mimicking clearwing moths from Mozambique (Lepidoptera: Sesiidae: Sesiini)

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Abstract

This article provides a description of a new genus and species of Sesiini, *Osmiasphex gorongosus* **gen. nov. & sp. nov.**, from central Mozambique. The new genus is characterized by an unusually short and broad head, with short, clavate antennae and short labial palpus with a greatly reduced terminal segment. It appears to be a mimic of bees of the genus *Osmia* Panzer, 1806.

Key words: Afrotropical region, Cossoidea, Gorongosa National Park, Rift valley, taxonomy

Introduction

The Sesiidae fauna of many regions of sub-Saharan Africa had been barely explored until a few decades ago. This situation changed with the development of artificial sex pheromones, which led to an increasing focus on African taxa by entomologists. Sesiini, in particular, proved to be extraordinarily diverse, with currently 20 genera and 39 species described (Bartsch 2009, 2013, 2015, 2017, 2018, Bartsch *et al.* 2023, De Prins & De Prins 2025, Fischer 2006, Pühringer & Kallies 2004, Pühringer & Sáfián 2011). All these taxa show little similarity to Sesiini from other faunal regions and appear to represent several evolutionary lineages endemic to Africa. During several biodiversity surveys in Mozambique, including Gorongosa National Park (GNP) and its buffer zone, multiple sesiids were collected by one of the authors (MB). GNP is situated in the southernmost part of the Great African Rift Valley, a geographic position that may explain the presence of many taxa of East African origin (Stalmans & Beilfuss 2008, Müller *et al.* 2012). Detailed examination revealed that one specimen collected in GNP belongs to an undescribed species, one that warrants a designation of a new genus of Sesiini.

Material and methods

Label data are quoted verbatim, with a slash at the end of each line. Additional information is given in square brackets. The specimen was photographed using a Canon EOS 5D digital SLR camera with a Canon MP-E 60mm macro-photo-lens. The genitalia were prepared by one of us (DB) by maceration in a 5–10% potassium hydroxide solution, without staining, and embedded in Euparal on a slide with a single cavity. Before embedding, the genitalia were photographed floating in a 70% alcohol solution with the valvae opened. Morphological terminology follows Špatenka *et al.* (1999), and the terminology of the wing venation follows Heppner & Duckworth (1981). Genitalia photographs were taken using a Leica Z-Series Macroscope with a Z16 APO Zoom-system and a DFC 490 camera, and were focus-stacked using Helicon Focus (Helicon Soft Ltd.) The holotype is deposited in the State Museum of Natural History Stuttgart (SMNS).

Taxonomic account

Osmiasphex gen. nov.

Type species: *Osmiasphex gorongosus* sp. nov., designated here.

Etymology. The name refers to the bee genus *Osmia* Panzer, 1806, which is most likely a mimicry model, and the ancient Greek σφήξ (sphēx) (= wasp).

Description. Medium-sized clearwing moths with wingspans of around 25 mm. Head: unusually short, with flat forehead, small eyes, and short, thick antennae. Proboscis reduced, not visible; labial palpus very short, straight, first and third palpomeres extremely short, the latter almost hidden between the scales of the second; first and second palpomeres with a dense, ventrally and laterally projecting scale tuft; frons broad and flat, nearly three times as wide as the compound eye, smooth, white laterally; scales of vertex and pericephalic scales short, dense, rugose; antenna approximately half as long as forewing, clavate, serrate and ciliate in males, with serration and ciliae tapering strongly distally, and completely absent in the last third. Thorax broad and strong, covered with roughened, partially hair-like scales, particularly long and dense laterally and ventrally; dorso-lateral scale tufts of metathorax well developed and dense. Legs: fore and midleg relatively short and strong, hindleg about as long as abdomen; coxa of foreleg nearly twice as long as it is wide; tibia and first tarsomere of hindleg with long tufted scales; spurs thin, all pairs with outer spur half as long as inner one. Wings: largely hyaline, apical area absent, discal spot of forewing narrow, slightly angled in the middle, absent in hindwing; wing membrane crystal clear; forewing veins R4/R5 stalked to about two-thirds, CuA1 and CuA2 arising from a common point; hindwing veins M3 and CuA1 with a common stalk. Abdomen: relatively short and stout, anal tuft weakly developed.

Male genitalia. Tegumen relatively slender, with a large, symmetrically forked gnathos; uncus long and slender, straight, bilobed, with few, short bristles dorsally and distally; valva short and wide, margins strongly concave dorsally, almost straight ventrally and distally, ventral margin only slightly thickened, angled distally towards tip, inner surface without crista sacculi, dorsal half densely covered with distally regularly enlarged, multifurcate “scale-like” setae, distal margin with numerous thorn and bristle-like setae; vinculum with short, rounded saccus; juxta rather broad, moderately long protruded; manica membranous with numerous spinuli and a prominent group of strong thorns dorsally; phallus (aedeagus) straight, distally slightly tapering, coecum penis simple and round, vesica with numerous minute spinuli and groups of spines.



FIGURES 1–2. *Osmiasphex gorongosus* sp. nov. holotype, male (1) upperside, (2) underside.

Diagnosis.

Osmiasphex gen. nov. can be defined by the following characters:

- (1) head unusually short and broad with small eyes;
- (2) labial palpus extremely short, third palpomere greatly reduced;
- (3) antenna very short, biserrate and ciliate in basal two-thirds;
- (4) uncus long and narrow, ventral rows of setae strongly reduced;

(5) gnathos very long, symmetrically forked (very different from that in most Sesiini);

(6) valva with broad, multiply forked setae (simple or thorn-like in most other Sesiini).

We consider characters 1, 2, 3 and 5 to be possible apomorphies of the genus. The wing venation shows no specialization and conforms to the Sesiini standard (Heppner & Duckworth 1981, Špatenka *et al.* 1999). Similarly developed tufts of scales on the tibia and the first tarsal segment of the hindleg are found in numerous Sesiini and probably represent a plesiomorphy. Due to the rather similar shapes of the tegumen-uncus complex, including the gnathos, the equally short and wide valve as well as the similar setae of the valva, *Hyleina* Bartsch, 2017 appears to be the closest possible relative. However, this genus differs significantly in its much longer, regularly upward curved labial palpus with a well-developed third palpomere, its completely different head shape, longer antennae, narrower wings, waisted abdomen, and longer legs extending well beyond the abdomen. Differences in the male genitalia include a wider tegumen, a shorter uncus, the shape of the valva with a dense distal spine field, a slightly bilobed coecum penis, and the absence of spines on the vesica.

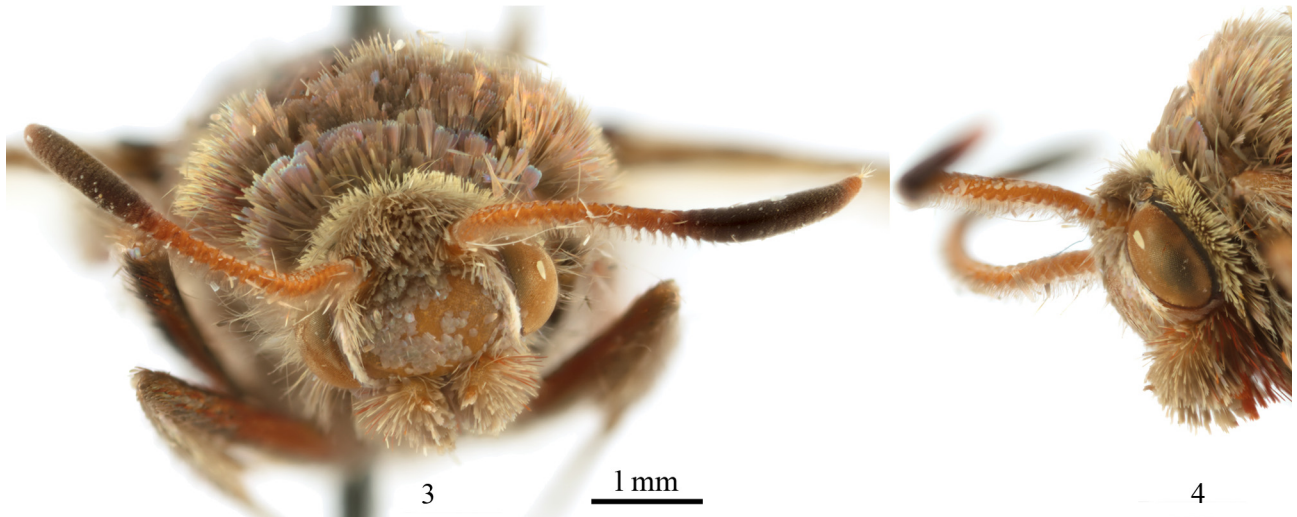
Other possibly related genera with similarly specialized setae of the valva are *Vespanthedon* Le Cerf, 1917 from Africa and *Sphecosesia* Hampson, 1910, and the likely incorrectly assigned *Cyanosesia leleji* Gorbunov & Arita, 2016 from Asia, which differ in both the body shape and the entire genitalic complex (Bartsch 2013, 2017, Gorbunov & Arita, 2016, Kallies 2020).

Osmiasphex gorongosus sp. nov.

Figs 1–7

Holotype: ♂, “Mozambique, Sofala Province, / Gorongosa National Park, / Bela Vista ranger outpost, / Miomba-Riverine Forest, / 18°38'50.78”S, 34°13'29.00”E, / 10.V.2015, 290m / Marek Bakowski leg.”; “Holotypus / *Osmiasphex gorongosus* / Bartsch & Bakowski, 2026 / ♂ / D. BARTSCH, des. 2025”; “Bartsch gen. prep. No. 2025-4”.

Etymology. This species is named after the Gorongosa National Park in Mozambique, where the only specimen was found. The gender is masculine.



FIGURES 3–4. *Osmiasphex gorongosus* sp. nov. holotype, male, head (3) frontal, (4) lateral.

Description. Holotype with a wingspan of 25.0 mm, antenna length 5.0 mm, forewing length 10.5 mm, body length 13.5 mm. Head: labial palpus pink-grey, first palpomere ventrally densely covered with dark red scales, second palpomere dorsally with some red scales; frons quite worn in the holotype, remaining scales pink-grey with intense pearly sheen, laterally silver-white; vertex glossy pink-grey; pericephalic scales white, ventrally pink-grey; antenna orange-brown, clavate part black with an orange-brown tip, flagellum dorsally as well as scape completely covered with light, pearly scales. Thorax: grey with pearly sheen, dorsally somewhat darker; tegula with some dark red scales basally; scapular spot at forewing base white-grey with a pearly sheen; patagia pink-grey with an intense

pearly sheen; mesothorax with a red spot near posterior end of tegula; scale tufts of metathorax dorso-laterally light grey, laterally and ventrally yellow-white. Legs: predominantly pink-grey with pearly gloss. Foreleg with femur dorsally orange-red, narrowly bordered with anthracite grey; tibia ventrally orange-red, lateral scale tuft mixed with some red scales. Mid- and hindleg with femur black, dorsally with some red scales, laterally white; hind tibia with numerous orange-red scales ventrally; tufted scales of hind tibia and first hind tarsomere brown-grey; other tarsomeres and spurs of both legs white. Wings: forewing basally black, costal area and discal spot, as well as veins and margins of both wings, sparsely covered with black-grey scales. Abdomen: grey with a slight pearly sheen; tergites 1–3 increasingly black-grey toward anterior margin; tergite 3 additionally densely mixed with dark red scales anteriorly; tergite 4 white anteriorly; tergite 5 densely mixed with black scales in anterior half; sternites 2 and 3 densely mixed with red scales; sternite 4 yellow-white, narrow black posteriorly; anal tuft with some red scales dorsally and ventrally.



FIGURES 5–6. *Osmiasphex gorongosus* sp. nov. holotype, (5) genitalia structure, (6) last segments of abdomen.

Male genitalia. Gnathos branches slightly bent outwards distally and increasingly sclerotized; uncus with single strong, loosely attached setae at the tip of each lobe; setaceous area of valva broader than bald ventral part; phallus (aedeagus) somewhat longer than valva; vesica asymmetric, without diverticulum, with an area of numerous short spines dorsally.

Diagnosis. Due to its external characteristics, particularly the unique shape of the head, this species is distinct and cannot be confused with any other species of the Sesiidae.

Habitat and behaviour. The discovery site is located in a Miombo-Riverine forest in the western part of the national park at the transition between the Rift Valley Savanna Woodlands and the Miombo Midland areas. The specimen was attracted by artificial light relatively early in the night.

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FIGURE 7. *Osmiasphex gorongosus* sp. nov. imaginal habitat.

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