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Two new Clearwing moths from coastal Kenya (Lepidoptera: Sesiidae: Melittiini, Osminiini)

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Abstract

In this study, two new species of African Sesiidae are described from coastal Kenya. *Melittia mida* **sp. nov.** (Melittiini) from a series of eight males from Mida village at the edge of the Arabuko-Sokoke Forest, and *Homogyna fenestra* **sp. nov.** (Osminiini) from ten males collected across the Kenyan coast between the Dakatcha Woodland in the north and Diani beach in the south. Adults and male genitalia of both species are illustrated. *Melittia mida* **sp. nov.** is well characterized by the predominantly olive-brown body colour and the large transparent areas of the forewings. *Homogyna fenestra* **sp. nov.** differs from similar congeners by a transparent area distal to the forewing discal spot and by the completely transparent hindwings.

Key words: Afrotropical Region, Arabuko-Sokoke Forest, Dakatcha Woodland, *Melittia* Hübner, [1819], *Homogyna* Le Cerf, 1911, taxonomy

Introduction

Compared to other African countries, the knowledge of Kenya's Sesiidae fauna is relatively good. De Prins & de Prins (2024) list 25 species in 17 genera on their excellent website "Afromoths". Nevertheless, it can be expected that numerous additional species, described and undescribed, occur in this exceptionally diverse country. During various visits to the Kenyan coast, the second author was able to capture a number of Sesiidae species using synthetic pheromones as well as specimens resting on foliage. These include ten males of *Afromelittia cf. caerulea* Bartsch, 2016, eight males of *Melittia oedipus* Oberthür, 1878, single males of each *Melittia cf. aureosquamata* (Wallengren, 1863), *Alonina rygchiiformis* Walker, 1856 and *Macrotarsipodes leptosceles* (Bradley, 1968) and specimens of further, as yet undescribed species (e.g. *Melittia* sp. nov.). The description of the undescribed species collected in only a single individual will follow as soon as more material is available. However, small series of two species in the genera *Melittia* Hübner, [1819] and *Homogyna* Le Cerf, 1911, respectively, allow their detailed description in this paper. Overall, this brings the total number of species known from Kenya to 29.

Materials and methods

Label data are quoted verbatim, with a slash at the end of each line. Specimens were photographed using Canon EOS 5D digital SLR camera and Canon MP-E 100mm macro-photo-lens. Genitalia were prepared by maceration in 5−10% potassium hydroxide solution without staining. Before embedding, genitalia were photographed floating in 70% alcohol solution with opened valvae and the phallus removed, using Leica Z-Series Macroscope with a Z16 APO Zoom-system, DFC 490 camera and Leica application suite program.

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Sex pheromones used in the field were produced by Pherobank, Wijk bij Duurstede, The Netherlands.
Museum acronyms are according to http://hbs.bishopmuseum.org/codens:
HNHM—Hungarian Natural History Museum, Budapest, Hungary.
SMNS—State Museum of Natural History, Stuttgart, Germany.

Results

Melittia Hübner, [1819]

This large genus comprises more than 120 species distributed in the tropics and subtropics of the world. To date, 31 species are listed for the Afrotropical Region including the southern parts of the Arabian Peninsula (de Prins & de Prins 2024, Pühringer & Kallies, 2024). African species of *Melittia* are the subject of only a few recent articles (Bartsch 2016, Gorbunov 2015, 2017, Gorbunov and Arita 1997).

Melittia mida sp. nov.

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Figs 1–7

Material examined. Holotype: ♂ (Figs 1, 2) "Kenya, Kilifi District, Mida / east of Arabuko-Sokoke / Forest, 20 m, 21–23.IV.2024, / 3°18'33.5"S, 39°57'58.9"E, / pheromone, Sz. Sáfián leg."; "Holotype, *Melittia mida*, Bartsch & Safian des. 2024" (SMNS).

Paratypes: 7 ♂ (Figs 3–6) same data as holotype (6 SMNS, 1 HNHM) (1 ♂, genitalia examined by D. Bartsch, slide DB 2024-09) (Fig. 7).

Etymology. Named after the type locality, the village of Mida, which lies between Mida Creek and the Arabuko-Sokoke Forest in the coastal region of Kenya.

Description. Holotype with alar expanse 33 mm, forewing length 14 mm, antenna length 7 mm, body 16 mm.

Head: labial palpus with basal palpomere white with some light yellow scales, second one pale yellow, laterally white with some black scales distally, terminal one yellow mixed with some black scales; frons dark grey, ventrally and laterally white; vertex and dorsal portion of pericephalic scales covered with mixture of black and white scales, pericephalic scales sub-dorsally greenish ochre, laterally pale yellow; antenna black, tip ventrally mixed with some light yellow scales, scapus dorsally white.

Thorax: patagia glossy greenish yellow; remaining parts dorsally greenish ochre, laterally grey, ventrally white with some yellow scales.

Legs: foreleg pale yellow; tibia orange-yellow; tarsus with black line dorsally. Midleg with coxa and femur pale yellow; ventral edge of femur with hair-like mixed white and light yellow scales; tibia yellow with tufts of long scales dorsally and ventrally; tarsus yellow, mixed with black scales; first tarsomere with tufts of long scales ventrally. Hindleg with coxa and femur pale yellow; ventral edge of femur with hair-like mixed white and light yellow scales; hindtibia and all tarsomeres with tufts of long, hair-like, mainly ochre-yellow scales, mixed with some brownish and dark grey scales; tibia laterally as well as first tarsomere on inner side black-brown, other tarsomeres black-brown throughout.

Wings: transparent areas very large; forewing apical area almost completely reduced; forewing discal spot narrow, black; all wings with costal area, veins and margins black, some greenish ochre scales basally; hindwing discal spot very narrow; hindwing dorsum black; fringes of all wings dark grey; underside of forewing costal area yellow.

Abdomen: dorsally black, posterior margins of all tergites narrow ochre-yellow; tergite 1 entirely, tergite 2 anteriorly and laterally, remaining tergites laterally covered with long, greenish ochre scales; sternites white; anal tuft ochre-yellow, laterally white; specialized scale follicles of tergite 8 largely reduced (compare Naumann 1971), present only in middle of posterior margin.

Male genitalia. Uncus lobes rather long, somewhat pointed, with rows of short strongly sclerotized spines apically; vinculum caudally narrowed; saccus relatively short; valva evenly widened distally, triangular, apical and

ventral lobe evenly rounded at the termen of the valva; ventral lobe densely covered with long strongly sclerotized setae; phallus simple, slightly shorter than valva.

Variation. Alar expanse varies between 30 and 35 mm, hindlegs vary somewhat in the extent and intensity of the dark pattern.

FIGURES 1–6. *Melittia mida* **sp. nov.** (1, 2) holotype ♂. (3–6) paratypes ♂ (dorsal view left, ventral view right).

Diagnosis. The large transparent areas, the largely reduced forewing apical area, the narrow forewing discal spot and the greenish-ochre colour of the body are characteristic and clearly distinguish this species from almost all

its congeners. In Africa, only *Melittia boulleti* Le Cerf, 1917 has a similar structure of the wings, with very narrow forewing apical area and narrow discal spots, but a completely different colouration of body and legs. In *M. boulleti*, thorax and abdomen are dark brown with bronze to bronze-purple sheen (greenish ochre dorsally, white ventrally in *M. mida* **sp. nov.**); anal tuft dark brown (ochre-yellow in *M. mida*); legs much darker, particularly hindtibia dark brown to black, yellow ventro-proximally, rusty ventrally and distally (mainly ochre-yellow in *M. mida* **sp. nov.**); hind tarsus except for first tarsomere smooth (with tufts of black scales in *M. mida* **sp. nov.**).

Habitat and Behaviour. This species was collected in a young secondary thicket along the edge of the Arabuko-Sokoke coastal forest complex (Fig. 8). The type series was captured using a bundle of various pheromone lures between 8:50 and 10:00 am in hot and sunny weather at 28–29°C and quite strong wind.

Distribution. Only known from the type locality.

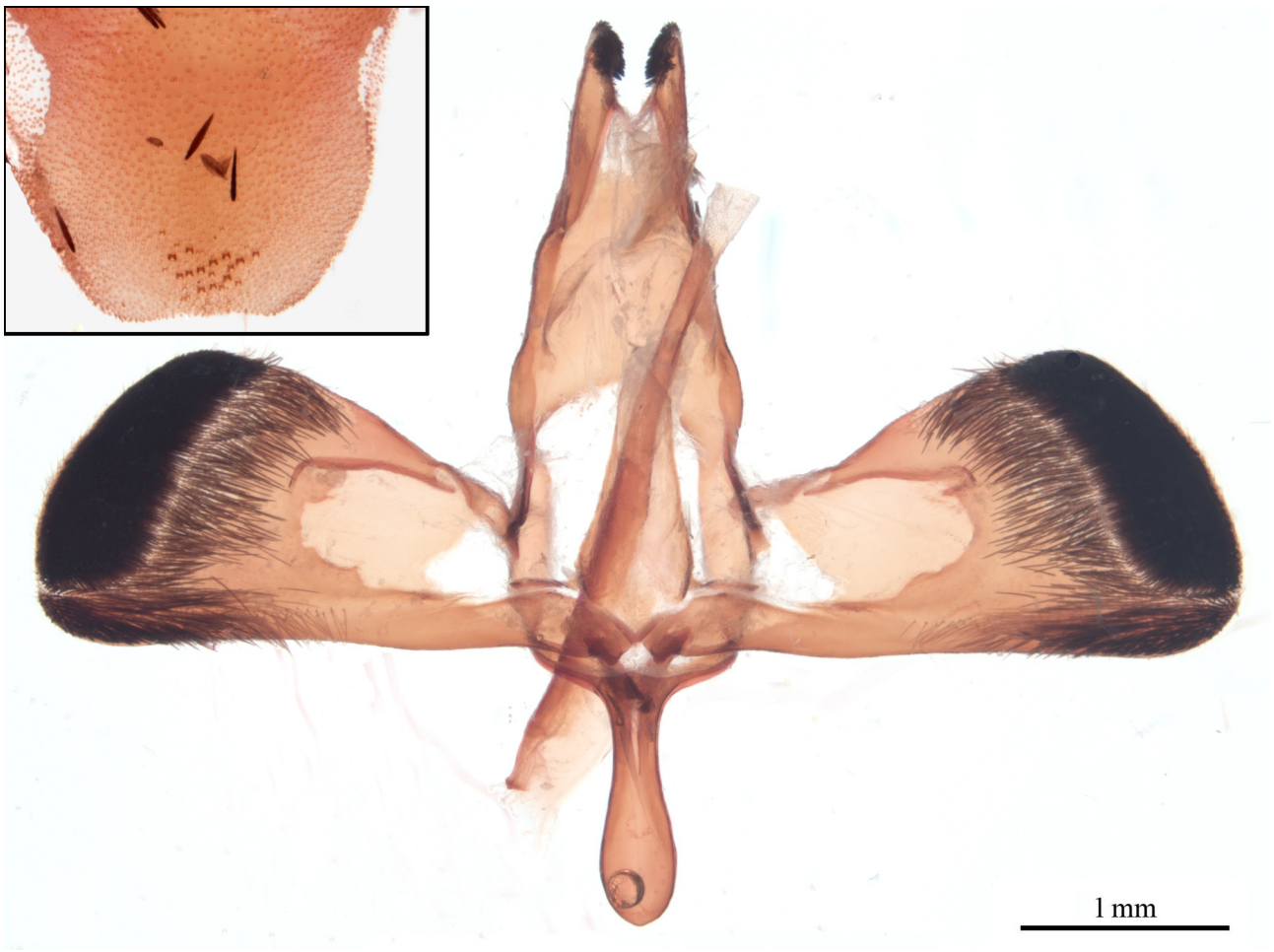

FIGURE 7. *Melittia mida* **sp. nov.** male genitalia, tergite 8 shown in insert.

Homogyna Le Cerf, 1911

This genus and its type species *Homogyna alluaudi* Le Cerf (1911) were described on the basis of a single male from "Boura, Wa-Taita" [southeastern Kenya, Taita Hills, Bura]. Hampson (1919) assigned additional species to the genus, mainly of South African origin. Gorbunov & Arita (1998) provided a revision of the genus solely based on the type species and placed it in the tribe Osminiini. Bartsch (2016) published a broader definition of the genus, divided it into two main species groups, the *H. pygmaea* (Rebel, 1899) group and the *H. xanthophora* (Hampson, 1919) group, described three new species and presented an identification key. Currently *Homogyna* includes ten species.

***Homogyna fenestra* sp. nov.**
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Figs 8–14

Material examined. Holotype: ♂ (Figs 8, 9) "Kenya, A Rocha Dakatcha Nature Reserve, Kilifi District / 2°53'32.00"S, 39°49'0.00"E / 147 m asl. / 19.IV.2024 / pheromone, Sz. Sáfián leg."; "Holotype, *Homogyna fenestra*, Bartsch & Safian des. 2024" (SMNS).

Paratypes: 2 ♂ (Figs 10–14) same data as holotype (SMNS, HNHM); 1 ♂ Kenya, Malindi, Watamu, A Rocha, Kenya, Plot 28, 3°22'40.91"S, 39°59'21.13"E 20 m, 1.–11.X.2022, leg.: Sáfián, Sz. ; 1 ♂ Kenya, South Coast, Diani Road south of Kinondo, 4°24'46.53"S, 39°32'29.55"E, 24.VII.2018, leg.: Sáfián, Sz; 1♂, Kenya, Mombasa-Bamburi, 1.–5.X.1993, leg. H. Riefenstahl; 1 ♂, Kenya, Mombasa, Reef Hotel, Nyali Beach, 1.–9.X.1993, leg. H. Riefenstahl; 4 ♂, Kenya, Marafa, "Hells Kitchen", 03°07.062'S, 39°57.477'E, 1.VIII.2004, pheromone, S. Materna & T. Schulze leg. (1 ♂, genitalia examined by D. Bartsch, slide DB 2009-07) (Fig. 14) (SMNS).

FIGURES 8–13. *Homogyna fenestra* **sp. nov.** (8, 9) holotype ♂. (10–13) paratypes ♂ (dorsal view left, ventral view right).

Etymology. Named after the external transparent area of the forewing, which is only present in this species within the genus.

Description. Holotype with alar expanse 15.0 mm, forewing length 6.5 mm, antenna length 4.0 mm, body 7.5 mm.

Head: labial palpus predominantly white, second palpomere distally increasingly light yellow and mixed with dark grey scales, terminal palpomere dark grey; frons white, centrally dark grey; vertex black, some orange-brown scales between antenna and ocellus, pericephalic scales dorsally orange-brown, laterally white; antenna dorsally black, ventrally yellow-brown, scapus ventrally white.

Thorax: almost completely black-grey; patagia with white patch and some yellow-brown scales laterally; tegula with white and light yellow scales caudally.

Legs: foreleg with coxa white, medially dark grey; femur black-grey, edges and distally narrow yellow-white; tibia pale yellow, proximally and distally with a narrow black lateral spot; tarsomeres pale yellow, distally black, broadest laterally. Midleg with coxa and femur black, ventral edge of femur with yellow-white, partially hair-like scales; tibia yellow with tufted scales dorsally and ventrally, laterally a large, black, longitudinal patch; first tarsomere yellow, with black distal patch dorsally; other tarsomeres yellow, dorsally and distally black. Hindleg with coxa whitish yellow; femur dark grey, laterally in ventral half whitish yellow, ventral edge with yellow-white, hair-like scales; tibia pale yellow, proximally and distally broad black, dorsally with tufted scales; tarsus black, each tarsomere ventrally with yellow, distal patch. Spurs of all legs yellow.

Wings: forewing largely opaque, black; wing base, discal spot and a longitudinal patch on discal cell orange-red; external transparent area developed, consisting of 4 cells; underside anterior of discal spot densely covered with yellow scales. Hindwing hyaline, distal margin narrow, veins and margins dark grey, discal vein and base of M2 without scales; discal spot absent; fringes of all wings dark brownish grey.

FIGURE 14. *Homogyna fenestra* **sp. nov.** male genitalia, phallus below.

Abdomen: dorsally black-grey, yellow-white are subdorsal spots on tergite 2, posterior half of tergite 4, tergite 7 throughout, terminal tergite except for black anterior margin, sternite 2 and 4 completely, terminal sternites mottled with some yellow scales; anal tuft very short, black laterally, light yellow medially.

Male genitalia. Uncus short, without medial protrusion; saccus short and broad; valva broadly rounded, expanded distally, twice as wide as basally, distal half covered with long, simple, basad pointing setae; phallus large, more than one and a half times longer than valva, straight, regularly tapering distally.

Variation. Alar expanse 13–16 mm. The longitudinal patch on the forewing discal cell is sometimes indistinct or absent. One specimen has the mesothorax with a small orange spot dorsally.

Diagnosis. By the structure of the male genitalia, *Homogyna fenestra* **sp. nov.** belongs to the *H. pygmaea* species group and is close related to *H. alluaudi*, *H. pygmaea* and *H. nama* Bartsch, 2016. From all these species, *H. fenestra* **sp. nov.** differs by the presence of a transparent area distal to the forewing discal spot and by the almost completely transparent hindwings. *H. alluaudi* and *H. pygmaea* are very similar to each other and may be conspecific. Both taxa have their forewings without transparent parts, lack an orange-red mark in the discal cell, and the hindwing with broad distal margin, extended between the cubitus-veins and the discal vein covered with black scales. *H. nama* has the forewing almost entirely black, the hindwing distally black and the abdomen with reddish markings dorsally.

The structure of male genitalia of *Homogyna fenestra* **sp. nov.** differs from that of *H. nama* by the much broader valva and the longer saccus, from that of *H. alluaudi* by the dorsally slightly more upward bent uncus and the ovoid, not triangular valva (the male of *H. pygmaea* is unknown).

Habitat and Behaviour. *H. fenestra* **sp. nov.** appears to be distributed along the Kenyan coast and was recorded from various habitat types including what was previously coastal rainforest and coastal thickets in the transition towards more open woodlands (*Brachystegia*) and Somali Scrub. The foodplants are likely to be smaller herbs rather than bushes or trees as the specimens approach the pheromone lures usually flying very close to the ground. Others have been seen investigating patches of herbaceous vegetation. The males caught at pheromone lures flew during the hottest midday hours during the rainy season in Dakatcha and Watamu.

Distribution. Only known from the almost entirely cleared coastal forest belt of Kenya near the Indian Ocean and from the Dakatcha Woodland slightly further west towards mainland Kenya.

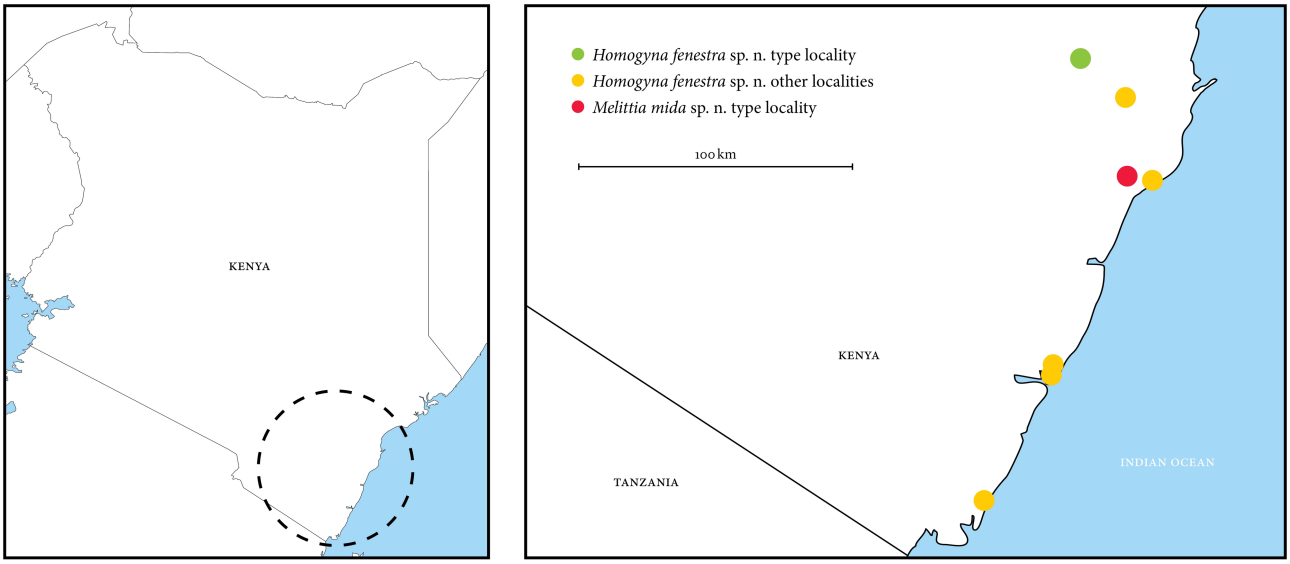

FIGURE 15. Distribution of *Melittia mida* **sp. nov.** and *Homogyna fenestra* **sp. nov.**

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