Metarbela haberlandorum sp. nov., a new moth from Kenya (Lepidoptera: Metarbelidae)

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Abstract: *Metarbela haberlandorum* **sp. nov.** is described from Kenya (Coast, Kwale District, Kaya Muhaka), holotype in BMNH, London. The male adult, the male genitalia and the habitat of the species are illustrated. The female is unknown.

Metarbela haberlandorum sp. nov., eine neue Metarbeliden-Art aus Kenia (Lepidoptera: Metarbelidae)

Zusammenfassung: Im folgenden Beitrag wird eine neue Metarbeliden-Art aus Kenia (Südküste, Kwale-Distrikt, Kaya Muhaka) vorgestellt. Der Holotypus, die männlichen Genitalien sowie der Lebensraum der Art werden beschrieben und abgebildet. Der Holotypus befindet sich im Natural History Museum (BMNH), London. Das Weibchen ist unbekannt. Bislang sind zwei Paratypen gefunden worden: Ein Paratypus konnte vom Autor 1996 – zwei Jahre nach dem Fund des Holotypus – an einem Waldrand im nordöstlichen Teil von Kaya Muhaka nachgewiesen werden. Vom gleichen Waldrand stammt auch der Holotypus. Der zweite Paratypus ist unter unbestimmtem Material in den Sammlungen des BMNH entdeckt worden und wurde bei Malindi an der Nordküste Kenias gefangen. Der erste Paratypus befindet sich im National Museums of Kenya (NMK), Nairobi, der zweite im BMNH. Die Kenntnis über die Verbreitung der neuen Art beschränkt sich gegenwärtig auf die zwei genannten Fundorte an der kenianischen Küste. In der Literatur gibt es unterschiedliche Standpunkte zu der Frage, ob die Familie Metarbelidae in die Familie Cossidae einzugruppieren ist oder ob es sich um eine eigene Familie handelt. Die Meinungen zu dieser Thematik werden in der Einführung dieses Beitrages angesprochen. Der Autor folgt den Auffassungen von HOLLOWAY (1986) und SCHOORL (1990). Danach ist die Familie Metarbelidae eine eigenständige Familie außerhalb der Cossidae. Auf die engen verwandtschaftlichen Beziehungen der Familie Metarbelidae zu der kleinen orientalischen Familie Ratardidae wird in der Einleitung ebenfalls hingewiesen. Die Merkmale der Familie Metarbelidae wurden von BROCK (1971) und genauer von HOLLOWAY (1986) beschrieben und teilweise abgebildet. Auf der Grundlage beider Arbeiten nennt der Autor sechs charakteristische Merkmale, die die neue Art als Metarbelide kennzeichnen. In diesem Zusammenhang wird – bezogen auf den Genitalapparat – darauf hingewiesen, daß bei diesem Ähnlichkeiten zu dem der *Squamura*-Arten auftreten. Der Fundort Kaya Muhaka zählt zu den Überresten der ehemals großflächigen Zanzibar-Inhambane-Wälder der ostafrikanischen Küste, die nur schwer zu klassifizieren

sind. Nach der vorhandenen Literatur ist Kaya Muhaka ein artenreicher Laubwald, der aus botanischer Sicht mehrere Charakterarten eines Feuchtwaldes aufweist (WHITE 1983, ROBERTSON & LUKE 1993). Der Lebensraum der neuen Metarbeliden-Art ist durch zahlreiche Pflanzenarten in der Baum-, Strauch- und Krautschicht gekennzeichnet. Bezogen auf eine Fläche von 250 m^2 wird der Lebensraum beschrieben. Der Autor konnte auf dieser Fläche 12 dominante Pflanzenarten (ohne Gräser) nachweisen und bestimmen. Dabei handelt es sich – mit Ausnahme eines eingebürgerten Strauches – um einheimische Arten. Darunter befinden sich drei Arten, die in Kenia nur in einigen Gebieten an der Küste verbreitet sind (BEENTJE 1994). Hinzu kommt eine endemische Art, die von BEENTJE (1988) als „stark gefährdet" eingestuft wurde und die bisher nur von der kenianischen Küste bekannt ist.

Introduction

NEUMOEGEN & DYAR (1894) suggested that the Metarbelidae are the sister-family of the Cossidae; HANDLIRSCH (1925), ZERNY & BEIER (1936) and MINET (1986) all treated the Metarbelidae as a subfamily of the Cossidae due to the similarity in the shape of pronotum in the two families. ROEPKE (1957) dealt with the family Metarbelidae under the name Squamuridae. HOLLOWAY (1986) stated that it is clear from FLETCHER & NYE (1982) that the name Metarbelidae of STRAND (1909) has priority. FLETCHER & NYE did not treat Squamuridae as a synonym although it must certainly be reckoned as such. HOLLOWAY (1986) included *Squamura* HEYLAERTS, 1890 in the Metarbelidae and treats the family Squamuridae as a synonym of Metarbelidae. SCHOORL (1990) thinks that it is easier to group the Metarbelidae out as a sister-group of the Cossidae than somewhere within the Cossidae. This is followed here.

Metarbelidae STRAND, 1909 has as type genus *Metarbela* HOLLAND, 1893. Teragridae HAMPSON, 1920 and Lepidarbelidae DALLA TORRE & STRAND, 1923 are junior synonyms. Arbelidae HAMPSON, 1892 and Hollandiidae KARSCH, 1896 are invalid names for the same family (SCHOORL 1990).

The family Metarbelidae is most diverse in the Ethiopian region but it is also known from the Oriental region. A few New World taxa are also attributed to the Metarbelidae (see DALLA TORRE & STRAND 1923, HOLLOWAY 1986). It should also be mentioned that a small lepidopterous family occuring in the Oriental region – the Ratardidae HAMPSON, 1898 – is considered by several authors to be closely related to the Metarbelidae (HANDLIRSCH 1925, BROCK 1971, HOLLOWAY 1986, INOUE 1988, KOBES & RONKAY 1990, OWADA 1993).

Adult characteristics of the Metarbelidae

Brock (1971) included the family Metarbelidae in the superfamily Cossoidea and described some characteristics of the Cossoidea like the radial system. Holloway (1986) described the adult characteristics of the family Metarbelidae in more detail. Schoorl (1990) treated the family Cossidae and mentioned that "extensive research on Metarbelidae and other Cossoidea is needed".

The new species was placed by the author in the family Metarbelidae due to the following adult characteristics:

♂. Head: Antennae bipectinate.

The forewing has only one strong anal vein. The base of the veins R4 and R5 is lost, followed by a splitting-back of M1 and R5 as described by Brock (1971) for "advanced members of the Cossid group (e.g. Metarbelidae)". Hindwing: frenulum absent. Genitalia: a broad, flattened uncus. The valves are small, rather rounded and similar to those of *Squamura* spp. described and figured by Holloway (1986).

Metarbela haberlandorum sp. nov.

Holotype ♂: Kenya – Coast, Kwale District, Kaya Muhaka, 45 m a.s.l., 16. II. 1994, leg. I. Lehmann (genital slide no. 116496 L. Kobes).

Paratypes: 1 ♂, Kenya – Coast, Kilifi District, Malindi, no date, leg. T. H. E. Jackson, BM 1935-203 (BMNH genital slide no. 38). 1 ♂, Kenya – Coast, Kwale District, Kaya Muhaka, 45 m a.s.l., 21. I. 1996, leg. I. Lehmann.

Type deposition: The holotype and first paratype are preserved in the collection of The Natural History Museum (BMNH), London, the second paratype in the collection of the National Museums of Kenya (NMK), Nairobi.

Description

♂. Head: Antennae rather short, heavily bipectinate, pecten distinctly longer than the width of the scape medially, moderately tapered. Head compact, pale greyish brown, vestiture moderately short and dense. Ocelli and chaetosemata absent. Eyes moderately large. Marginal sclerites of eyes and vertex more or less narrow. Labial palp porrect and short, nearly two-thirds of the eye diameter, moderately thin, three-segmented, second segment distinctly longer than first and third, third segment ovate, proboscis absent. Thorax: Pale greyish brown, vestiture dorsal moderately short and dense. Pronotum consisting of a pair of flaps.

Abdomen: Pale greyish brown with some greyish brown dorsal tufts on the abdominal segments, length of abdomen shorter than the width of the hindwing. Legs: Vestiture of foreleg dense and posteriorly long; hindleg with three spurs, tibia of hindleg swollen, vestiture of tarsi long, shortening apically, tarsal claws moderately long.

Forewing: Forewing length (Fwl) 25 mm (measured from the wing base to the apex). Ground colour greyish brown, suffused with grey and brown scales. Scales mainly multipointed. Cilia greyish brown, mixed in with darker scales and spatulate scales. Terminal line serrate, subterminal line broad and bright greyish, confluent near apex, discal and medial lines indistinct, terminal area grey. Area between subterminal line and cell along M2, M3, CuA1 and CuA2 ochre brown. Dark basal streak to the outer end of cell accompanied by a white streak towards costa. From centre of cell towards termen a tiny white dash, meeting some brighter scales at inner margin. Retinaculum absent.

Hindwing: Unicoloured greyish, slightly paler towards termen, frenulum absent.

Underside: Forewing and hindwing unicoloured grey brown, paler towards termen.

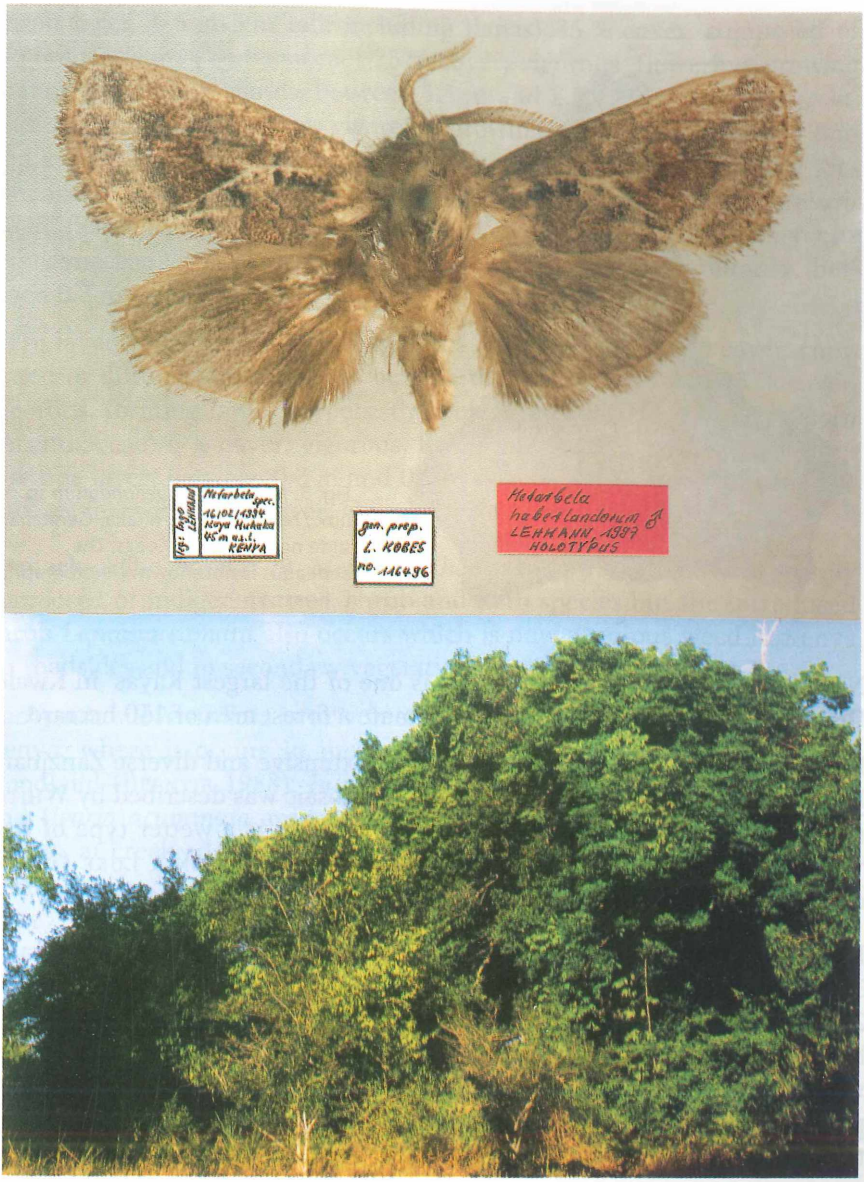
♂ genitalia: Rather small (total length of the genitalia corpus about 3.2 mm). Uncus bifid, scaphium broad and flattened, margin covered with hair-like setae. Tegumen broad and relatively short. Valves small, stout, squarish, apex of valve flattened. Dorsal margin of valve rounded, bearing about 25 setae. Saccus long, finger-like about ½ length of valve. Sacculus absent. Aedeagus about 0.7 mm long, without cornuti.

♀ and immature stages unknown.

Distribution. Currently only known from the type locality, Kenya.

Etymology. This new species is dedicated to my grandparents Mrs Charlotte HABERLAND and Mr Willi HABERLAND (†), Finsterwalde, Germany.

Bionomy. The holotype and the second paratype were found at the same forest edge in the northeastern part of Kaya Muhaka. A vegetation analysis of the habitat was done by the author on 12. II. 1996 and covers an area of 250 m². The forest of Kaya Muhaka is located about 2.5 km northwest of the village Mwabungu (approx. 32 km south of Mombasa), Kwale District, on the south coast of Kenya. It has been designated as a



Figs. 1–2. Fig. 1 (top): *Metarbela haberlandorum* sp. nov., holotype ♂. Fwl: 25 mm. (Photograph: A. BERGER.) **Fig. 2** (bottom): View of the habitat of *M. haberlandorum* — a forest edge in northeastern Kaya Muhaka, Kenya. (Photograph: I. LEHMANN.)

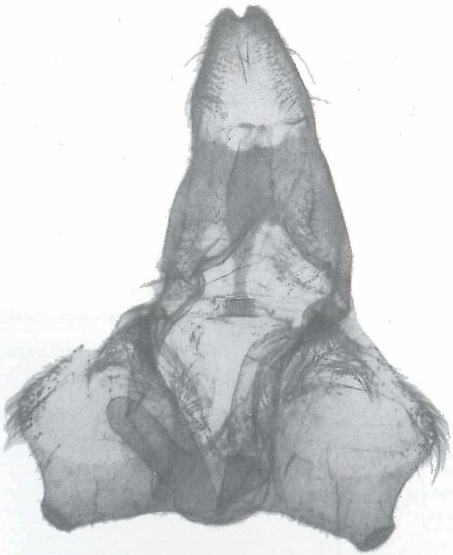


Fig. 3: *Metarbela haberlandorum* sp. nov., holotype, ♂ genitalia. Genitalia slide no. 116496 L. KOBES. The aedeagus is not shown. (Photograph: L. KOBES.)

National Monument since 1992 and is one of the largest Kayas[1] in Kwale District. ROBERTSON & LUKE (1993) estimate a forest area of 150 hectare.

Kaya Muhaka is a relict patch of the once extensive and diverse Zanzibar-Inhambane regional mosaic. This regional mosaic was described by WHITE (1983). After WHITE's classification Kaya Muhaka is a wetter type of the "Zanzibar-Inhambane undifferentiated forest". ROBERTSON & LUKE (1993) classify Kaya Muhaka as a "rich patch of a wetter deciduous forest".

Habitat Description. Vegetation stratification: tree layer (5 m–25 m tall) 35 % cover, composed of *Julbernardia magnistipulata* (Caesalpiniaceae) 25 % cover, vigorous, growing solitarily, scattered along forest edge, between 10 m and 25 m tall; *Blighia unijugata* (Sapindaceae) 5 % cover, vigorous, growing solitarily, approx. 16 m tall; *Alchornea laxiflora* (Euphorbiaceae) 5 % cover, feeble, solitary in groups, between 5.5 m and 6 m tall.

[1] "Kaya means homestead in several Bantu languages and has come to have several meanings in present day coastal Kenya" (ROBERTSON & LUKE 1993). The Kaya forests have once sheltered the fortified villages of the Mijikenda (Wanyika) people. The various Mijikenda groups left their Kayas in the 1850ies and 1870ies (HUNT et al. 1981). Today, only a few Kayas are still a spiritual centre of the Mijikenda, sheltering graves or traditional carved memorial posts.

Shrub layer (0.5 m–5 m tall; including lianas) 35 % cover, composed of *Lantana camara* (Verbenaceae) 25 % cover, vigorous, flowering, growing in pure population stands, between 1.5 m and 2.5 m tall; *Hyphaene compressa* (Palmae) 5 % cover, vigorous, growing solitarily, between 1.8 m and 2.1 m tall; *Uvaria acuminata* (Annonaceae), *Deinbollia borbonica* (Sapindaceae), *Lecaniodiscus fraxinifolius* (Sapindaceae), *Pachystela subverticillata* (Sapotaceae), *Landolphia kirkii* (Apocynaceae) and *Saba comorensis* (Apocynaceae), few with small cover, vigorous, growing solitarily, between 0.8 m and 2.5 m tall.

Herb layer (< 0.5 m tall; including herbs and seedlings) 30 % cover, composed of different grass species outside the forest edge with 25 % cover, vigorous, forming larger carpets; the perennial herb *Hypoestes forskaolei* (Acanthaceae) 5 % cover, vigorous, flowering, forming small patches below tree layer, between 0.2 m and 0.5 m tall; *Deinbollia borbonica* (Sapindaceae) few with small cover, vigorous, growing solitarily, 0.4 m tall.

Remarks. The habitat of *Metarbela haberlandorum* sp. nov. is mainly composed of indigenous tree, shrub and herb species but the introduced shrub *Lantana camara* also occurs which is now a serious weed in Kenya on roadsides and in secondary vegetation (Beentje 1988).

Pachystela subverticillata is a "vulnerable" species and endemic to coastal Kenya, where it occurs in moist forest or along rivers in bushland or woodland (Beentje 1988). *Julbernardia magnistipulata, Landolphia kirkii* and *Uvaria acuminata* are species of coastal Kenya where they occur in forests, at creek edges or in (secondary) woodlands or thickets (Beentje 1994).

Acknowledgements

The author is grateful to Prof Dr Lutz Kobes of the Heterocera Sumatrana Society (Göttingen, Germany) for the genital dissection of the holotype. He also acknowledges the many important comments and criticisms regarding the manuscript given by Prof Dr Kobes and Mr Martin Honey of the Entomology Department of The Natural History Museum (BMNH), London. Equally he acknowledges the help given by Mr David Carter (BMNH), who generously allowed the author access to the collections of African moths. The author appreciates their considerable assistance, suggestions and advice during his stay in the museum.

Furthermore, the author owes considerable thanks to Dr Richard K. Bagine (Deputy Director, National Museums of Kenya, NMK), Nairobi, for his support and guidance during the research in Kenya and Mrs Esther Kioko (NMK) for her valuable assistance at various times in the field. He would like to extend thanks also to Mr Quentin Luke and Mr Mohamed Pakia of the Coastal Forest Conservation Unit, Ukunda, for their friendly support and help in determining plant species of Kaya Muhaka and to the Kaya Muhaka Elders for allowing the author access to their land.

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Received: 21. I. 1997

 ISSN 0723-9912