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New data on morphology and distribution of little known genus *Groenendaelia* Yakovlev, 2004 (Lepidoptera, Cossidae: Cossinae) with description of new tribe *Groenendaelini* Yakovlev, tribus n.

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Abstract

The article describes for the first time the female of *Groenendaelia kinabaluensis* (Gaede, 1933) (Lepidoptera, Cossidae: Cossinae), and provides photos of the male genitalia. The species is for the first time reported for the fauna of Laos. The map of the genus distribution is given. The tribe *Groenendaelini* Yakovlev, **tribus n.**, including two genera, *Groenendaelia* Yakovlev, 2004 and *Miacora* Dyar, 1905, is described. The article has 8 illustrations.

Key words: Biodiversity, South-Eastern Asia, taxonomy, entomology, fauna, *Groenendaelia kinabaluensis*, Carpenter-Moths.

Introduction

The monotypic genus *Groenendaelia* Yakovlev, 2004 was established for south-eastern Asian species *Cossus kinabaluensis* Gaede, 1933. It has the following characteristics: the rod-like, not pectinate antenna, the black stroke on the fore wing between CuA_2 and A_{1+2} , the strongly reduced saccus (Yakovlev 2004: 338). *G. kinabaluensis* Gaede, 1933 had been previously known only on males from northern Thailand, southern Myanma, Malay Peninsula, Borneo, Sumatra and Java (Roepke, 1957; Barlow, 1982, Holloway 1986; Yakovlev 2004, 2011); the female external characters and genitalia description had not been published. I got a possibility to examine new materials on this little studied species, including those from new localities, and also one female, the description of which is given below.

Material and methods

In the study, we used the materials from the following collections of Germany and Russia:

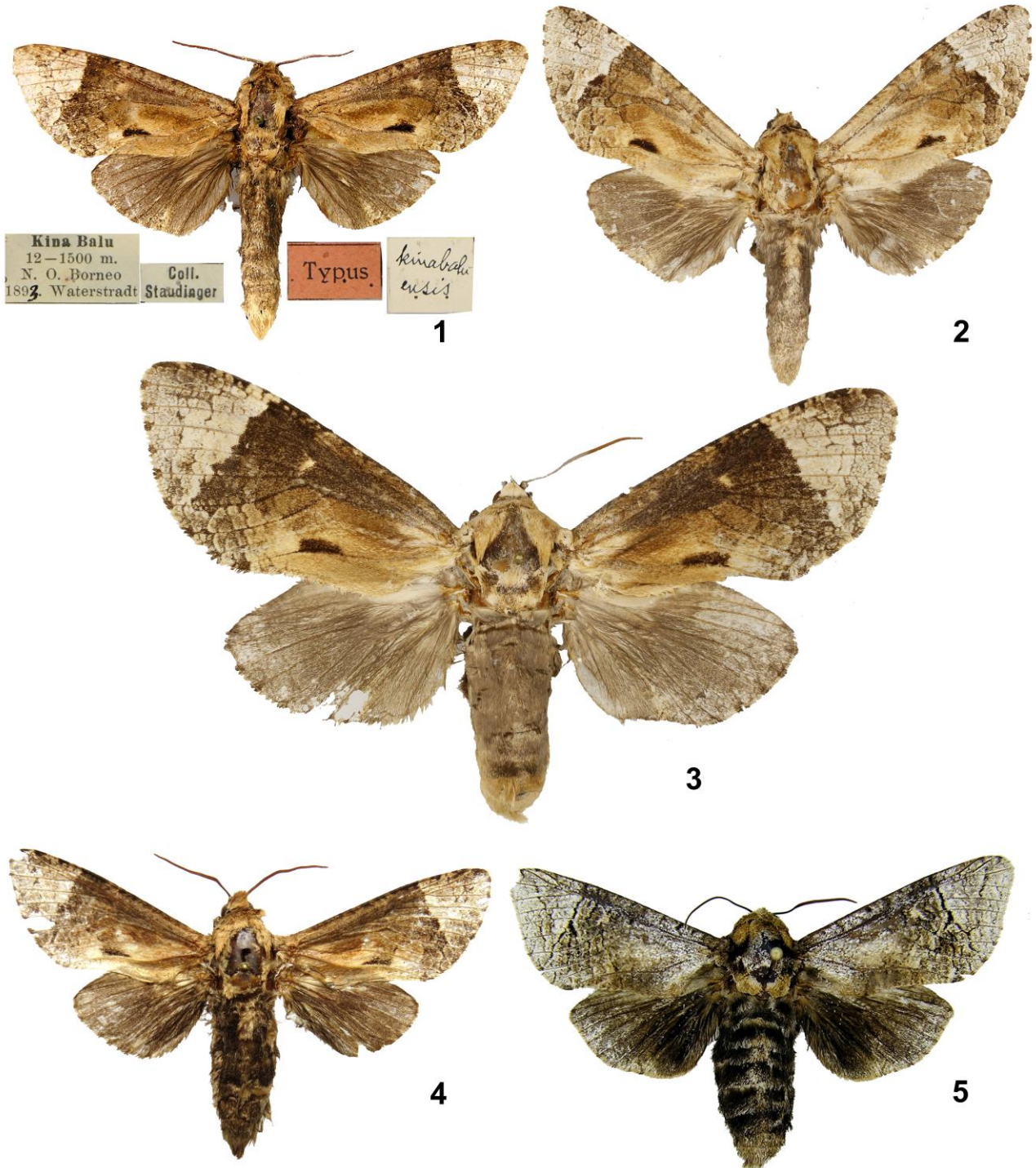
MfN Museum für Naturkunde (Berlin, Germany)

MSW private collection of Manfred Ströhle (Weiden, Germany)

MWM Museum Witt (Munich, Germany)

RYB private collection of Roman V. Yakovlev (Barnaul, Russia)

Male genitalia were mounted in euparal on slides following Lafontaine and Mikkola (1987). The adults were photographed using digital camera of iPhone 7. The genitalia preparations were photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereo-microscope.



Figures 1–5. Adult specimens of Cossidae: 1. *Groenendaelia kinabaluensis* (Gaede, 1933), holotype, male (MfN); 2. *G. kinabaluensis*, male, Western Sumatra, Mt. Sanggul (MWM); 3. *G. kinabaluensis*, female, Borneo sept., Mt. Trus Madi (MWM); 4. *G. kinabaluensis*, male, Laos (MSW); 5. *Miacora tropicalis* (Schaus, 1904), male, Central Peru (RYB).

Results

Groenendaelia kinabaluensis (Gaede, 1933)

Figs 1–4, 6–7, 9

Cossus kinabaluensis Gaede, 1933, Indo-Austr. Spinn. Schw.: 809, fg. 93i.

Type locality: Kina Balu [Borneo].

Type material: holotype (male) in MfN, examined.

Material examined. Malaysia: Holotype, male, Kina Balu, 12–1500 m, N. O. Borneo, 1893, Waterstradt, coll. Staudinger (MfN); 1 male, Malaysia, Cameron Highland, SW Ringlet, 14.02.2001 (MSW); 6 males, Borneo sept., Mt. Trus Madi, 1150–1200 m, 1–7.04.1997, leg. B. & K. Martini (MWM, Gentalpräparat Heterocera Nr. 9276); 1 female, Borneo sept., Mt. Trus Madi, 1150–1200 m, 4–24.04.2002, leg. Martini (MWM, Gentalpräparat Heterocera Nr. 33.231). Thailand: 1 male, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 12.11.1999., leg. Marton Hreblyay (MWM, Gentalpräparat Heterocera Nr. 9278); 1 male, Thailand, Chiang Mai, Chiang Dao Hill R., 20.07.2001, leg. Hentschel & Petrányi (MWM, Gentalpräparat Heterocera Nr. 33.235). Laos: 1 male, Laos, Phu-Soai Dao, 07.1996, Stumpe Felix (MSW). Myanmar: 1 male, S-Burma, Tenasserim, Davna, 3 sept. 1995, leg. Steincke & Lehmann (MWM); 7 males, S-Burma, Tenasserim, Khao-Vai, 1000 m, 04-06.1996, 99.30E; 13.14N, leg. Steincke & Lehmann (MWM, Gentalpräparat Heterocera Nr. 9277). Indonesia: 1 male, Indonesien, Borneo, Kalimantan, Selatan Prv., 30 km E Kandangan, 800 m, 15 km NE Loksado, 09.1997, rainforest, leg. Jakl (MWM); 2 males, Sumatra, NW Aceh, Mt. Silawa, 600 m, 84 km ostlich Banda-Aceh, 23–28.3.1993, leg. Dr. R. Brechlin (MWM); 1 male, North Sumatra, Huta Padang, 310 m, 99°11'E, 2°28'N; 15.03.1993, leg. Dr. R. Brechlin (MWM); 2 males, Indonesia, Western Sumatra, Mt. Sanggul, env. Laudai, H – 1200–1450 m, leg. S. Jakl (MWM).

Description of female (Fig. 3). Length of fore wing 40 mm. Antenna simple, not pectinate. Wing pattern resembles that of male. Fore wing slightly wider than in male. Wing mottled: wide dark-brown portion discally from costal edge to medial trunk, light-brown portion with bright dark-brown stroke between CuA_2 and A_{1+2} from medial trunk to rear edge of wing, wide dark-brown portion postdiscally, light-creamy portion with dense reticulated brown pattern submarginally and apically. Hind wing grey without pattern. Fringe on all wings mottled: brown at veins, creamy between veins.

Female genitalia (Fig. 6). Ovipositor long, with transverse notches on lateral surfaces; papillae anales cylindrical; apophyses posteriores twice longer than apophyses anteriores; VII sternum strongly sclerotized, consisting of two semicircular parts; ostium poorly submerged; antrum funnel-shaped, strongly sclerotized; ductus bursae copulatrix wide, relatively short, membranous; bursa copulatrix bag-like, elongated, without signa.

Distribution. Southern Myanmar (Tanintharyi Province), Northern Thailand (Nan and Chiang Mai Provinces), Laos (Sainyabuli Province), Malaysia (Malayan Peninsula, Borneo), Indonesia (Kalimantan, Java, Sumatra). New record for Laos.

Composition. Monotypic genus.

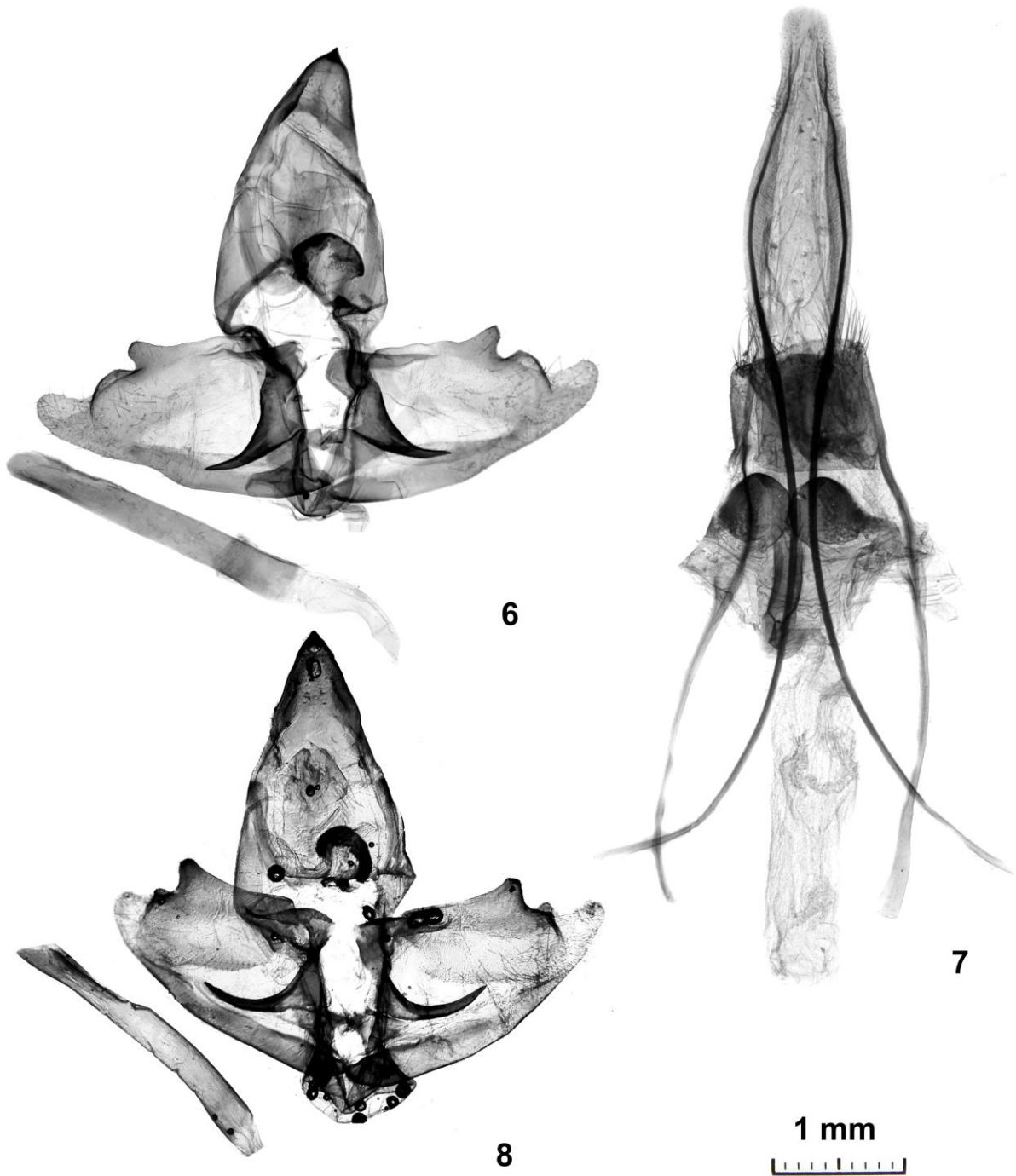
Taxonomic position. Morphologically, the genus *Groenendaelia* Yakovlev, 2004 is most close to the neotropical genus *Miacora* Dyar, 1905 (Type species: *Cossus tropicalis* Schaus, 1904) (Figs 5, 8). Their similarity was already discussed by us (Yakovlev 2014: 58). In the present study, we unite the two genera into one tribe.

Groenendaelini Yakovlev, tribus n.

Type genus: *Groenendaelia* Yakovlev, 2004, designated here.

Description. Moths of big size, adults active in the nighttime. Antenna prismatic, simple, not pectinate. Fore wing preapically lightened. Hind wing dark, without pattern.

Male genitalia. Uncus pyramidal, apically acute; gnathos arms thick, of medium length; gnathos of medium size, covered with tine spikes; valve wide, with double process on costal edge, with practically reduced membranous distal part of valve; transtilla processes basally thick, long, apically acute; juxta robust with long lateral processes; saccus poorly expressed; phallus equal to valve in length, relatively thick, poorly curved, vesica aperture in dorso-apical position, vesica without cornuti.



Figures 6–8. Genitalia of Cossidae: 6. *G. kinabaluensis*, male, Borneo, Trus-Madi (MWM, Gentalpräparat Heterocera Nr. 33.238); 7. *G. kinabaluensis*, female, Borneo, Trus-Madi (MWM, Gentalpräparat Heterocera Nr. 33.231); 8. *M. tropicalis*, male, Central Peru (RYB, in the tube).

The tribe has following synapomorphies:

- the non-pectinate antenna;
- the special double process on the costal edge of the valve;
- the practically reduced membranous distal part of the valve;
- the practically reduced saccus.

Composition. Two Genera: *Groenendaelia* Yakovlev, 2004 and *Miacora* Dyar, 1905.

Distribution. South-Eastern Asia and Southern America.

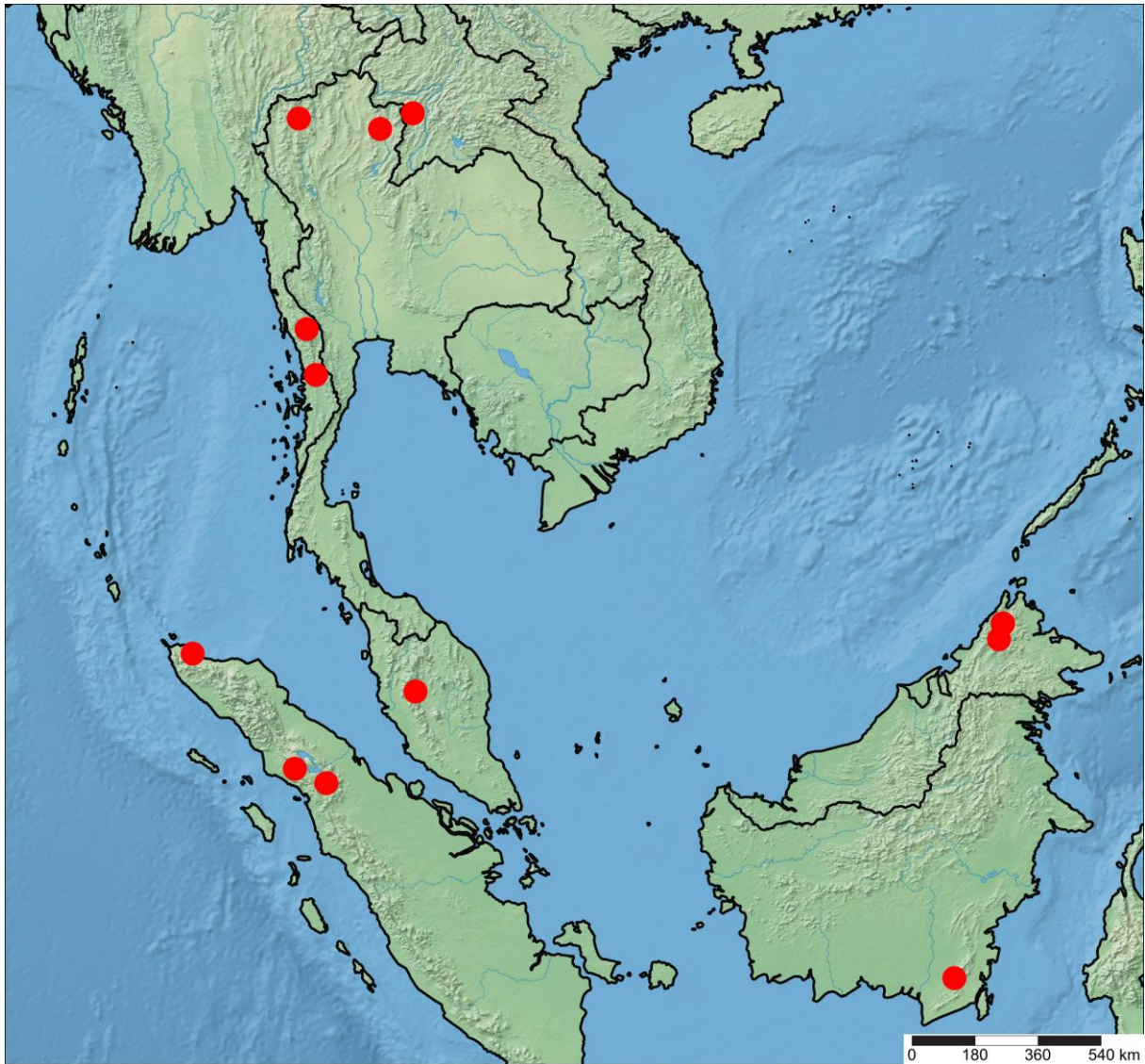


Figure 9. Distributional map of *G. kinabaluensis*.

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