Atalanta (Dezember 2004) **35**(3/4):335-351, colour plate XVI, Würzburg, ISSN 0171-0079

Cossidae of Thailand. Part 1

(Lepidoptera, Cossidae)

by

ROMAN V. YAKOVLEV

received 11.VI.2004

Abstract: A first part of data are presented on the rich fauna of Cossidae of Thailand, concerning the genera studied so far. 20 species are recorded, 15 of them for the first time for that country: *Wittocossus mokanshanensis* (DANIEL, 1945), *Groenendaelia kinabaluensis* (GAEDE, 1933), *Paracossus* spec., *Zeuzera multistrigata* MOORE, 1881, *Zeuzera rhabdota* JORDAN, 1932, *Zeuzera conferta* WALKER, 1856, *Zeuzera indica* HERRICH-SCHÄFFER, 1854, *Tarsozeuzera fuscipans* (HAMPSON, 1892), *Relluna nurella* (SWINHOE, 1894), *Rapdalus pardicolor* (MOORE, 1879), *Chalcidica minea* (CRAMER, 1779), *Xyleutes persona* LE GUILLOU, 1841, *Xyleutes strix* (LINNAEUS, 1758), *Duomitus ceramicus* (WALKER, 1865), *Skeletophyllon euphyes* (WEST, 1932). Three new genera, *Wittocossus* gen. nov. (type species *Cossus mokanshanensis* DANIEL, 1945), *Groenendaelia* gen. nov. (type species *Cossus kinabaluensis* GAEDE, 1933), *Lakshmia* gen. nov. (type species *Lakshmia zolotuhini* spec. nov.) and two new species, *Lakshmia zolotuhini* spec. nov. (LT: Thailand, Changwat Nan, 5 km E of Bo Luang) and *Lakshmia hauensteini* spec. nov. (LT: North Thailand, Prov. Chiang Mai, 450 m, Mok Fa Garden Resort, 98°48' E; 19°06' N) are described. Two new combinations: *Wittocossus mokanshanensis* (DANIEL, 1945) comb. nov., *Groenendaelia kinabaluensis* (GAEDE, 1933) comb. nov., and one new synonym *Wittocossus mokanshanensis* (DANIEL, 1945) = *Cossus yunnanensis* HUA et al., 1990 syn. nov. are stated.

Резюме: В статье приводятся первые данные о богатой фауне древоточцев Таиланда, касающиеся исследованной части родов. Отмечены местонахождения для 20 видов Cossidae, из которых 15 впервые приводятся для рассматриваемой территории: *Wittocossus mokanshanensis* (DANIEL, 1945), *Groenendaelia kinabaluensis* (GAEDE, 1933), *Paracossus* spec., *Zeuzera multistrigata* MOORE, 1881, *Zeuzera rhabdota* JORDAN, 1932, *Zeuzera conferta* WALKER, 1856, *Zeuzera indica* HERRICH-SCHÄFFER, 1854, *Tarsozeuzera fuscipans* (HAMPSON, 1892), *Relluna nurella* (SWINHOE, 1894), *Rapdalus pardicolor* (MOORE, 1879), *Chalcidica minea* (CRAMER, 1779), *Xyleutes persona* LE GUILLOU, 1841, *Xyleutes strix* (LINNAEUS, 1758), *Duomitus ceramicus* (WALKER, 1865), *Skeletophyllon euphyes* (WEST, 1932). Описаны 3 новых рода: *Wittocossus* gen. nov. (типовой вид: *Cossus mokanshanensis* DANIEL, 1945), *Groenendaelia* gen. nov. (типовой вид: *Cossus kinabaluensis* GAEDE, 1933), *Lakshmia* gen. nov. (типовой вид: *Lakshmia zolotuhini* spec. nov.) и 2 новых вида: *Lakshmia zolotuhini* spec. nov. (LT: Thailand, Changwat Nan, 5 km E of Bo Luang), *Lakshmia hauensteini* spec. nov. (LT: North Thailand, Prov. Chiang Mai, 450 m, Mok Fa Garden Resort, 98°48' E; 19°06' N). Установлены 2 новые комбинации: *Wittocossus mokanshanensis* (DANIEL, 1945) comb. nov., *Groenendaelia kinabaluensis* (GAEDE, 1933) comb. nov. и один синоним: *Wittocossus mokanshanensis* (DANIEL, 1945) = *Cossus yunnanensis* HUA et al., 1990 syn. nov.

Nowadays Cossidae are one of the least studied groups of Macroheterocera. This refers to all regions including the rich and diverse fauna of SE. Asia. Examination of Asian carpenter moths

in museums of Germany involved abundant collections from Thailand preserved mostly in Thomas Witt Museum, Munich (MWM). So far I studied a part of the genera and present the results here. Hitherto data on Cossidae of Thailand were mentioned only in few papers (Tams, 1924; Schoorl, 1990). Hereby I communicate data on the distribution of 20 species in Thailand, reporting 15 of them for the first time, and describe the following new taxa: *Wittocossus* gen. nov., *Groenendaelia* gen. nov., *Lakshmia* gen. nov., *Lakshmia zolotuhini* spec. nov., *Lakshmia hauensteini* spec. nov. and state two new combinations, *Wittocossus mokanshanensis* (Daniel, 1945) comb. nov., *Groenendaelia kinabaluensis* (Gaede, 1933) comb. nov. and one synonym *Cossus yunnanensis* Hua et al., 1990 = *Wittocossus mokanshanensis* (Daniel, 1945) syn. nov.

List of abbreviations
AHC - Collection of Armin Hauenstein (Untermünkheim, Germany)
MHUB - Museum of Natural History at Humboldt University (Berlin, Germany)
MWM - Museum Thomas Witt (Munich, Germany)
RYB - Collection of Roman Yakovlev (Barnaul, Russia)
ZFMK - A. Koenig's Zoologisches Museum (Bonn, Germany)

Wittocossus gen. nov.

Type species: *Cossus mokanshanensis* Daniel, 1945

Description
Male. Moths of intermediate size. Antennae with unpaired processes on articles, much resembling those of *Cossus cossus* (Linnaeus, 1758). Body covered with gray and silvery hairs. Forewing length 23-28 mm. Patagia black. Forewing elongate, with an intense white suffusion extending from base to cell; grey discal band wide; outer area white with a pattern of dark strokes. Fringe chequered, dark at veins. Hindwing grey with a dark fringe. Venation similar to that in *Cossus* Fabricius, 1793.
Male genitalia. Uncus triangular, pointed apically. Gnathos arms wide, short, gnathos densely covered with small spinules. Valva wide, triangular-shaped with a membranous distal end, bearing a triangular projection on the costal margin. Arms of transtilla well developed, their middle and distal parts free and directed upwards while bases united with each other with a membrane. Juxta large, with a wide incision in the upper part and diverging broad lateral processes densely set with tiny spinules. Saccus well developed. In lateral projection genitalia very long, with saccus strongly protruding behind. Aedeagus straight, wide, with vesica opening in apical position, there are small weakly sclerotized processes at the aedeagus end.
Female unknown.

Diagnosis
The new genus belongs to the subfamily Cossinae Leach, [1815]. It is close to the genus *Cossus* Fabricius, 1793 but differs in the following characters:
- complicated wing pattern
- narrower forewing

- another shape and disposition of arms of transtilla
- connection of bases of transtilla arms with a membrane
- another shape of juxta
- male genitalia generally elongate in lateral projection
- presence of lateral processes in aedeagus.

So far a monotypical genus.

Range
S. China, Thailand.

Etymology
The new genus is named in honour of THOMAS WITT (Munich), an entomologist who offered for analysis the material of Cossidae from his private collection, exceptional for its richness and quality.

1. *Wittocossus mokanshanensis* (DANIEL, 1945) **comb. nov.** (colour plate XVI, figs. 1, 2; text figs. 1, 2; map 1).

Cossus mokanshanensis DANIEL, 1945, Mitt. Münch. Ent. Ges. **35/39**: 227, pl. 1: fig. 2.

Reported for Thailand for the first time:
1 ♂, Thailand, Chiangmai, Maetaeng, 19.IX.1998 (MWM).
1 ♂, Thailand, Chiangmai, Huew Keo National Park, Doi Suthep, 1200 m, 12.VI.-24.VI.88. leg. SCHMITZLER (ZFMK).

Additional material studied
1 ♂, Holotype, Mokanshan, Prov. Chekiang, 31.V.1930 (ZFMK).
1 ♂, Mokanshan bei, Hangchow (China), Mitte Juli 1919, (H. HÖNE) (ZFMK).
1 ♂, Mokanshan, 15.VI.1930, HÖNE (ZFMK).
1 ♂, Paoshan b. Nanking, Prov. Kiangsu, 15.IV.1930, H. HÖNE (ZFMK).
1 ♂, Mokanshan, 26.IX.1930, HÖNE (ZFMK).
1 ♂, Mokanshan, 17.VI.1930, HÖNE (ZFMK).
1 ♂, China, Yunnan, Laoyeshan, Luliang, 2700 m, VII.2000, leg. native collector (MWM).
2 ♂♂, China, C. Yunnan, Lanniqingshan, Eshan, 2500 m, VII.2000, leg. native collector (MWM).
4 ♂♂, China, S. Yunnan, N. Changuan Co., IX.99, Guok-andashan, leg. WANG et LI (MWM).
2 ♂♂, China, Yunnan prov. (NW), Nujang, Liru and Duong auton. pref. Fugong county, 42 km N of Fugong, 1390 m, 12.-16.V.1999, 27.15° N; 98.55'E, leg. Dr. R. BRECHLIN (MWM).

Systematic notes
In their work on Cossidae of China, HUA et al. (1990) described a new species *Cossus yunnanensis* HUA et al., 1990 (LT: Fensqing, Yunnan). An illustration of its genitalia in Fig. 3 and habitus in Table 2, fig. 13, leaves no doubt that they have studied a specimen of *Wittocossus mokanshanensis* (DANIEL, 1945) with unremoved fats, that did not allow to reveal the specific wing pattern. The genitalia fully correspond to *Wittocossus mokanshanensis* (DANIEL, 1945). Thus, *Cossus yunnanensis* HUA et al., 1990 = *Wittocossus mokanshanensis* (DANIEL, 1945) **syn. nov.**

Groenendaelia gen. nov.

Type species: *Cossus kinabaluensis* GAEDE, 1933.

Description
Male. Moths of intermediate size. Antennae simple, without processes on articles, appressed dorsally. Thorax and abdomen stout, pubescent due to dense dark hairs. Forewing elongate with a pointed apex, with a complicated pattern of alternating black and light-brown elements and an elongate bright black spot at the middle of the anal margin, wing apical area white. Hindwing dark.
Male genitalia. Uncus wide, triangular with a pointed sclerotized apex. Gnathos arms wide, gnathos wide, densely covered with small spinules. Valva wide with a strong processus on the costal margin and a robust innerly directed crest, distal end membranous. Arms of transtilla well developed, fang-shaped, free (not connected with each other) and diverging, with strongly sclerotized central and distal parts. Saccus weakly developed, Aedeagus straight, thick and slightly widening to distal end, vesica opening occupies a distal position. Vesica without cornuti.
Female unknown.

Diagnosis
The new genus belongs to the subfamily Cossinae LEACH, [1815]. By a complex of external and structural characters it is quite isolated systematically, of those the main ones are:
- peculiarities in wing pattern, in particular presence of a dark spot between CuA2 and A1+2
- simple antennae
- presence of a robust processus on the valva costal margin
- strongly reduced saccus
- specific juxta shape.
So far the genus is monotypical.

Range
Indonesia (Borneo, Sumatra), S. Burma, Thailand.

Etymology
The new genus is named in honour of J. M. A. VAN GROENENDAEL, a well known entomologist and doctor from Holland who worked in various regions of Indonesia and collected tremendous material of Lepidoptera.

2. *Groenendaelia kinabaluensis* (GAEDE, 1933) **comb. nov.** (colour plate XVI, figs. 3, 4; text figs. 3, 4; map 1)

Cossus kinabaluensis Gaede, 1933: 809.

Reported for Thailand for the first time:
1 ♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 12.XI.1999., leg. MARTON HREBLAY (GenPr Het 9278 - MWM).

Additional material studied
1 ♂, Holotype, Kina Balu, 12-1500 m, N.O. Borneo, 1893, Waterstradt, coll. STAUDINGER (MHUB).
6 ♂♂, Borneo sept., Mt. Trus Madi, 1150-1200 m, 1.-7.IV.1997, leg. B. & K. MARTINI (GenPr Het 9276 - MWM).
1 ♂, Indonesien, Borneo, Kalimantan, Selatan Prv., 30 km E Kandangan, 800 m, 15 km NE Loksado, IX.1997, rainforest, leg. JAKL (MWM).
2 ♂♂, Sumatra, NW Aceh, Mt. Silawa, 600 m, 84 km östlich Banda-Aceh, 23.-28.III.1993, leg. Dr. R. BRECHLIN (MWM).
1 ♂, North Sumatra, Huta Padang, 310 m, 99.11°E, 2.28°N; 15.III.1993, leg. Dr. R. BRECHLIN (MWM).
1 ♂, S-Burma, Tenasserim, Davna, 3 sept. 1995, leg. STEINCKE & LEHMANN (MWM).
7 ♂♂, S-Burma, Tenasserim, Khao-Vai, 1000 m, IV.-VI.1996, 99.30°E; 13.14°N, leg. STEINCKE & LEHMANN (GenPr Het 9277 - MWM).

Paracossus HAMPSON, 1904

3. *Paracossus* spec.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Changwat Nan, 25 km N of Bo Luang, 1250 m, 28.II.1998, leg. HREBLAY et SZABOKY (MWM).
2 ♂♂, Thailand, Changwat Nan, 25 km N of Bo Luang, 1250 m, 17.II.1998, leg. HREBLAY et SZABOKY (MWM).
1 ♂, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 15.II. 1998 (MWM).
2 ♂♂, Changwat Chiang Mai, 15 km SW Wiang Haeng, 1400 m, 3.III.1998, leg. HREBLAY et SZABOKY (MWM).

Zeuzera LATREILLE, 1804

4. *Zeuzera multistrigata* MOORE, 1881 (map 2)

Zeuzera multistrigata MOORE, 1881, Proc. Zool. Soc. London: 327.

Reported for Thailand for the first time.

Material
18 ♂♂, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 18 km NW of Fang, 2100 m, 19.-20.IX.1998, leg. A. SZABO (MWM).
6 ♂♂, Thailand, Changwat Chiang Mai, Mt. Doi Inthanon, NP, 2300 m, 7.-8.IX.1998, leg. A. SZABO (MWM).
1 ♂, Thailand, Changwat Chiang Mai, 20 km NW of Mae, 1650 m, 9.IX.1999, leg. A. SZABO (MWM).

5. *Zeuzera rhabdota* JORDAN, 1932 (map 2)

Zeuzera rhabdota JORDAN, 1932, Mem. Mus. Hist. Nat. Belg. **4** (6), hors serie: 24-25.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1100 m, 30.III.1996, leg. TIBOR CSOVARI & PAL STEGER (GenPr Het 9320 - MWM).
1 ♂, Thailand, Changwat Phayao, 15 km W of Huai Fuang, 740 m, 9.VIII.1999, leg. T. CSOVARI & L. MIKUS (GenPr Het 8987 - MWM).
1 ♂, S. Thailand, Surutkheni Prov., Christ village, 27.-30.IV.1995 (MWM).
1 ♂, Thailand, Prov. Kanchanaburi, 34 km NE Sisawat, 700 m, 03.V.2002, leg. GÖRGNER & IHLE (RYB).

6. *Zeuzera coffeae* NIETNER, 1861 (map 2)

Zeuzera coffeae NIETNER, 1861, Enemies of Coffee Tree: 21-22.
Zeuzera coffeae, TAMS, 1924: 278.
Zeuzera coffeae, SCHOORL, 1990: 153.

Earlier reported for Thailand by TAMS (1924) from Bangkok, by two males of 7.III.1916, and one female of 30.XI.1914, and by SCHOORL [1990] without specification of locality.

Material
1 ♂, Changwat Phayao, 15 km SE Shiang Muan, 640 m, 26.XI.98, leg. TIBOR CSOVARI & LASZLO MIKUS (MWM).
1 ♂, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII.99, leg. TIBOR CSOVARI & LASZLO MIKUS (MWM).
1 ♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 12.IX.1999, leg. MARTON HREBLAY (MWM).

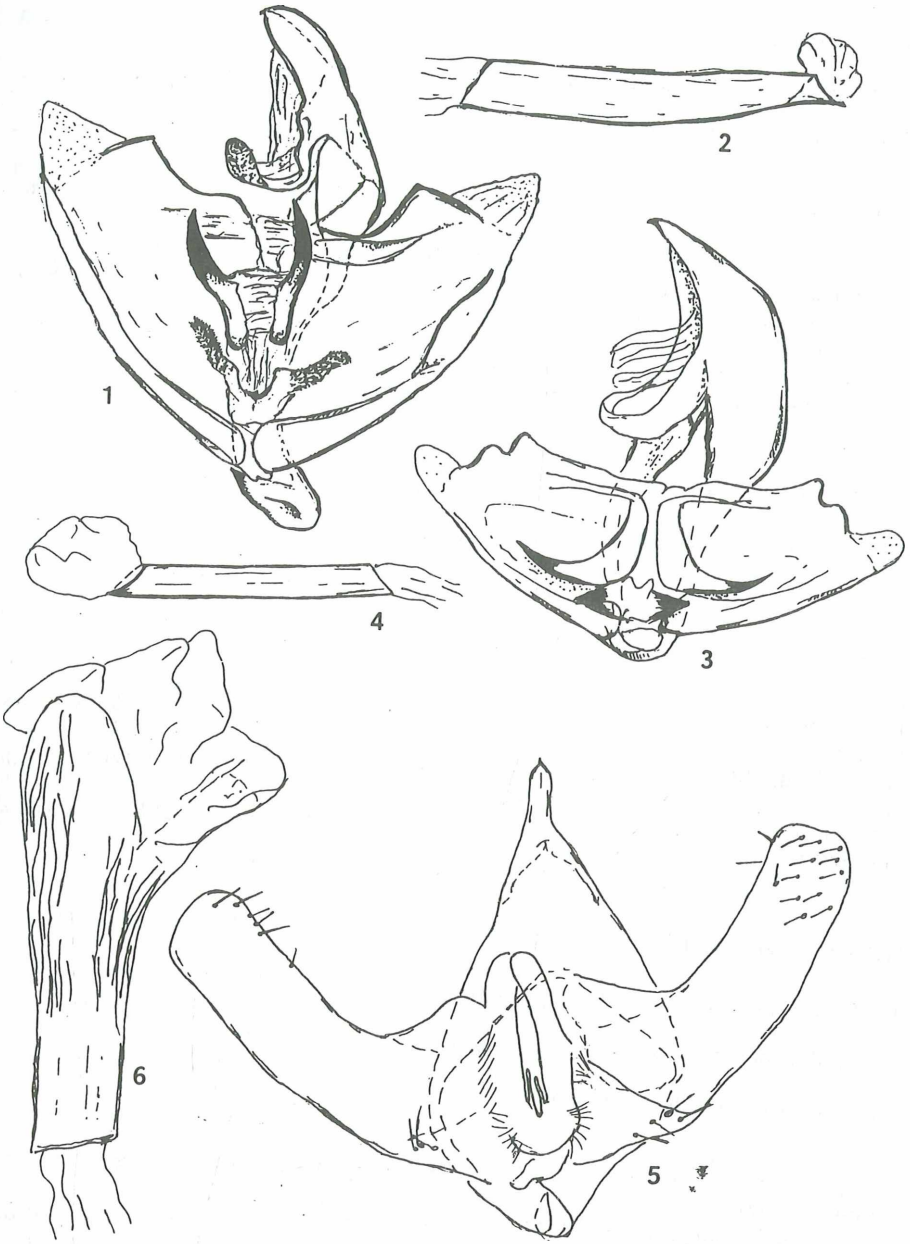
7. *Zeuzera conferta* WALKER, 1856 (map 3)

Zeuzera conferta WALKER, 1856, List Lep. Het. Brit. Mus. **7**: 1536.

Reported for Thailand for the first time.

Material
1 ♂, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII.99, leg. TIBOR CSOVARI & LASZLO MIKUS (MWM).
6 ♂♂, Thailand, Mae Sot, von Doi Massoe, 800 m, 10.III.2002, ex coll. S. LOEFFLER (RYB).
1 ♂, Thailand, Prov. Kanchanaburi, 34 km NE Sisawat, 700 m, 03.V.2002, leg. GÖRGNER & IHLE (RYB).

Fig. 1: Male genitalia of *Wittocossus mokanshanensis* (DANIEL, 1945), frontal proection. Fig. 2: Aedeagus of *Wittocossus mokanshanensis* (DANIEL, 1945) lateral proection. Fig. 3: Male genitalia of *Groenendaelia kinabaluensis* (GAEDE, 1933), frontal proection. Fig. 4: Aedeagus of *Groenendaelia kinabaluensis* (GAEDE, 1933), lateral proection. Fig. 5: Male genitalia of *Lakshmia zolotuhini* spec. nov., frontal proection. Fig. 6: Aedeagus of *Lakshmia zolotuhini* spec. nov., lateral proection.


1
2
3
4
5
6

8. *Zeuzera indica* Herrich-Schäffer, 1854 (map 3)

Zeuzera indica Herrich-Schäffer, 1854, Samml. Aussereur. Schmett. **1**: 58, fig. 166.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 24.I.1999, leg. Csabo & Czere (MWM).
1 ♂, Changwat Chiang Mai, 2 km S of Kop Dong, 1800 m, 24.III.1998, leg. Csovari (MWM).
3 ♂♂, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 15.II.1998, leg. Hreblay & Szaboky (MWM).
1 ♂, Thailand, Surutkhani prov., Christ Village, 27.-30.IV.1995 (MWM).
1 ♂, Thailand, Chiang Mai Prov., Sansai, 15.I.1999, ex coll. P. Schmit.
6 ♂♂, Thailand, Mae Sot, von Doi Massoe, 800 m, 10.III.2002, ex coll. S. Loeffler (RYB).

Tarsozeuzera Schoorl, 1990

9. *Tarsozeuzera fuscipans* (Hampson, 1892) (map 3)

Duomitus fuscipans Hampson, 1892, Fn. Brit. India. Moths **1**: 309.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Changwat Nan, 15 km N of Bo Luang, 1000 m, 7.IV.1998, leg. Csovari & Steger (MWM).
1 ♂, Thailand, Changwat Chiang Mai, Mt. Doi Inthanon, NP, 39 km road N of Chom Thong, 1820 m, 1.-3.VI.1998, leg. Dr. Ronald Brechlin (MWM).
1 ♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 29.-30.VI.1998, leg. Csabo & Soos (MWM).

Relluna Schoorl, 1990

10. *Relluna nurella* (Swinhoe, 1894) (map 4)

Azygophleps nurella Swinhoe, 1894, Ann. Mag. Nat. Hist. (6)**14**: 440.

Reported for Thailand for the first time.

Material
2 ♂♂, Thailand, Changwat Nan, 25 km N of Bo Luang, 1150 m, 28.II.1996, leg. Hreblay & Szaboky (MWM).
1 ♂, Thailand, Changwat Nan, 30 km N of Pua, 1700 m, 27.II.1998, leg. Csovari & Steger (MWM).

Rapdalus SCHOORL, 1990

11. *Rapdalus pardicolor* (MOORE, 1879) (map 4)

Zeuzera pardicolor MOORE, 1879, Descr. Ind. Lep. Atkinson: 86.

Reported for Thailand for the first time.

Material
2 ♂♂, Thailand, Changwat Chiang Mai, 20 km NW of Mae Ai, 1650 m, 9.IX.1999, leg. SZABO & CZERE (MWM).
1 ♂, Thailand, Changwat Chiang Mai, 6 km SE Pang Faen, 1100 m, 21.VIII.1999, leg. CSOVARI & MIKUS (MWM).

Chalcidica HÜBNER, 1816

12. *Chalcidica minea* (CRAMER, 1779) (map 4)

Phalaena (Bombyx) minea CRAMER, 1779, Papill. Exot. **2**: 52, pl. 131, fig. D.

Reported for Thailand for the first time.

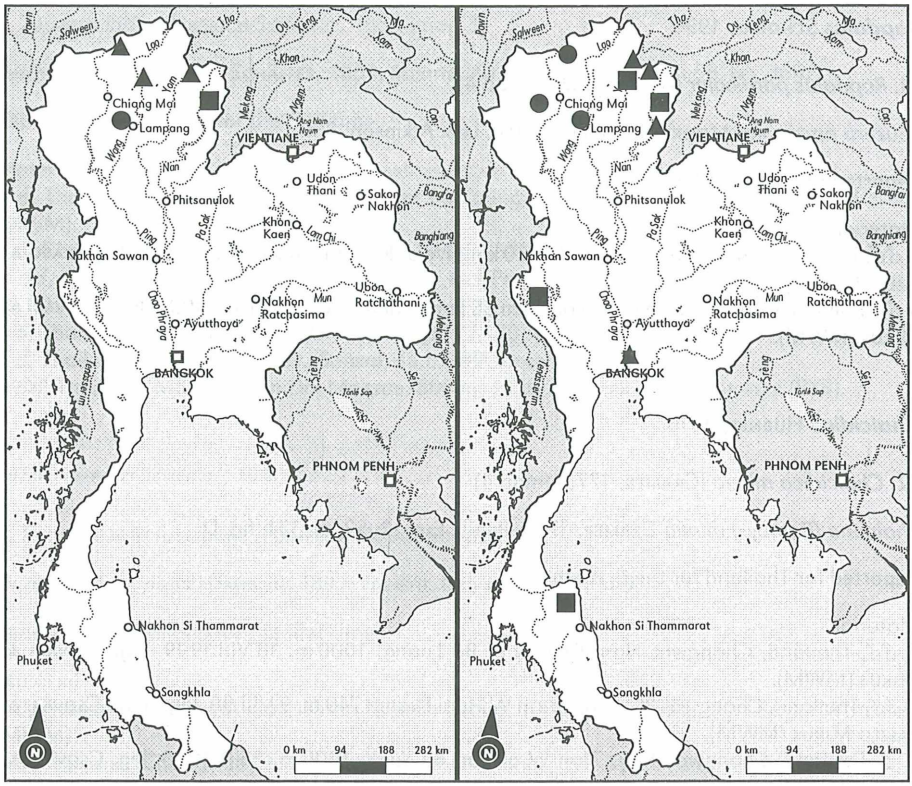
Material
2 ♂♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 18.VIII.1999, leg. CSOVARI & MIKUS (MWM).
7 ♂♂, Thailand, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII.99, leg. TIBOR CSOVARI & LASZLO MIKUS (MWM).
1 ♂, Thailand, Changwat Nan, 7 km W of Ban Bo Yuak, 1000 m, 25.IX.1998, leg. CSOVARI & MIKUS (MWM).
1 ♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 20.–21.VI.1998, leg. SZABO & SOOS (MWM).
2 ♂♂, Thailand, Changwat Nan, 8 km W of Pha Lak, 800 m, 17.VI.1998, leg. SZABO & SOOS (MWM).
2 ♂♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 29.–30.III.1998, leg. CSOVARI & STEGER (MWM).
1 ♂, Thailand, Ranong, 500 m, Mai 2002, ex coll. S. LOEFFLER (RYB).

Xyleutes HÜBNER, 1816

13. *Xyleutes persona* LE GUILLOU, 1841 (map 5)

Xyleutes persona LE GUILLOU, 1841, Revue Zool. **4**: 257.
Xyleutes leuconotus (WALKER, 1856), TAMS, 1924: 231.

Earlier reported for Thailand by TAMS (1924) with one female of 13.III.1915 from Bangkok.



Map 1: Distribution of Cossidae in Thailand: ● – *Wittocossus mokanshanensis* (Daniel, 1945); ■ – *Groenendaelia kinabaluensis* (Gaede, 1933); ▲ – *Paracossus* spec.

Map 2: Distribution of Cossidae in Thailand: ● – *Zeuzera multistrigata* Moore, 1881; ■ – *Zeuzera rhabdota* Jordan, 1932; ▲ – *Zeuzera coffeae* Nietner, 1861.

Material

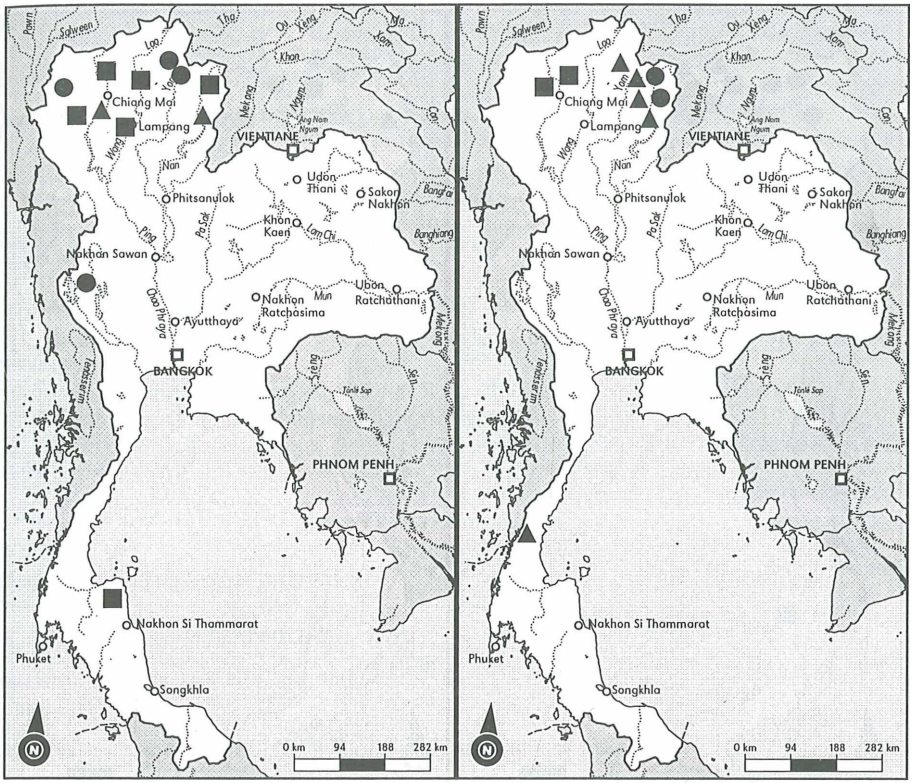
4 ♂♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 18.VIII.1999, leg. Csovari & Mikus (MWM).

2 ♂♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 20.–21.VI.1998, leg. Szabo & Soos (MWM).

1 ♂, Thailand, Changwat Chiang Mai, Mt. Doi Inthanon, NP, 44.5 km road N of Chom Thong, 2240 m, 26.V.1998, leg. Dr. Ronald Brechlin (MWM).

1 ♂, Thailand, Changwat Chiang Mai, Mt. Doi Inthanon, NP, 31 km road N of Chom Thong, 1360 m, 24.V.–6.VI.1998, leg. Dr. Ronald Brechlin (MWM).

3 ♂♂, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 15.II.1998, leg. Hreblay & Szaboky (MWM).



Map 3: Distribution of Cossidae in Thailand: ● – *Zeuzera conferta* WALKER, 1856; ■ – *Zeuzera indica* HERRICH-SCHÄFFER, 1854; ▲ – *Tarsozeuzera fuscipans* (HAMPSON, 1892).

Map 4: Distribution of Cossidae in Thailand: ● – *Relluna nurella* (SWINHOE, 1894); ■ – *Rapdalus pardicolor* (MOORE, 1879); ▲ – *Chalcidica minea* (CRAMER, 1779).

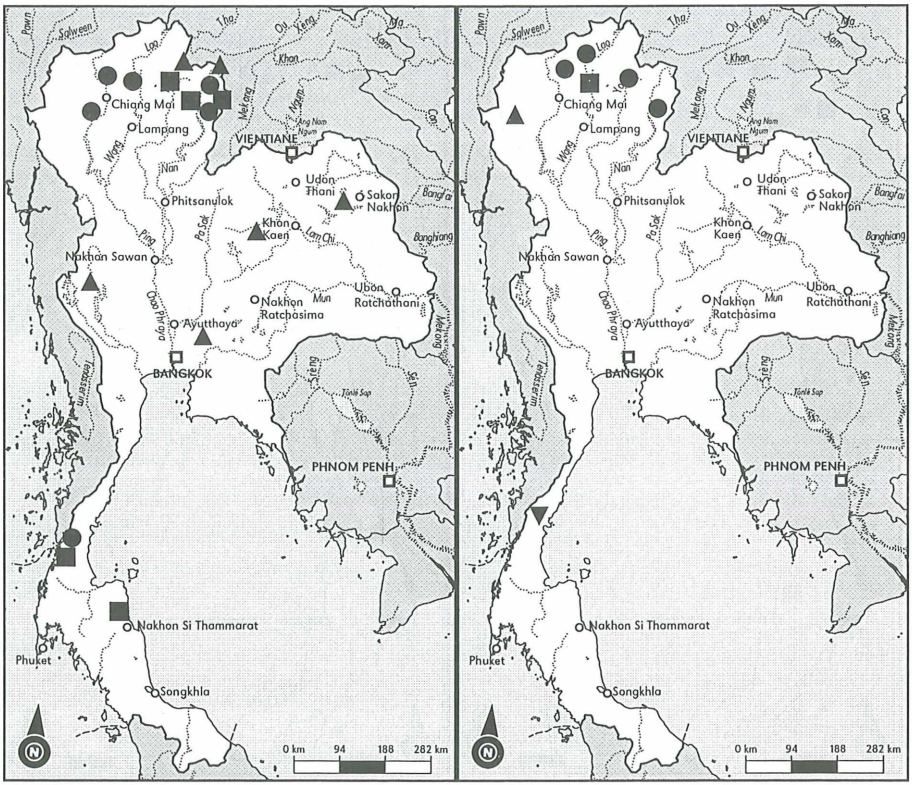
1 ♂, Thailand, Changwat Chiang Mai, 20 km NW of Sop Kha, 2 km S Kop Dong, 1800 m, 13.IX.1999, leg. SZABO & CSORE (MWM).
1 ♂, Thailand, Ranong, 500 m, Mai 2002, ex coll. S. LOEFFLER (RYB).

14. *Xyleutes strix* (LINNAEUS, 1758) (map 5)

Phalaena Noctua strix LINNAEUS, 1758, Syst. Nat. Ed. 10a: 508.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Surutkhani prov., Christ Village, 27.–30.IV.1995 (MWM).



Map 5: Distribution of Cossidae in Thailand: ● – *Xyleutes persona* Le Guillou, 1841; ■ – *Xyleutes strix* (Linnaeus, 1758); ▲ – *Duomitus ceramicus* (Walker, 1865).

Map 6: Distribution of Cossidae in Thailand: ● – *Lakshmia zolotuhini* spec. nov.; ■ – *Lakshmia hauensteini* spec. nov.; ▲ – *Skeletophyllon euphyes* (West, 1932); ▼ – *Azygophleps scalaris* (Fabricius, 1775).

2 ♂♂, Thailand, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII.99, leg. Tibor Csovari & Laszlo Mikus (MWM).
2 ♂♂, Thailand, Changwat Nan, 15 km N of Bo Luang, 1000 m, 7.IV.1998, leg. Csovari & Steger (MWM).
2 ♂♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 29.–30.III.1998, leg. Csovari & Steger (MWM).
1 ♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 20.–21.VI.1998, leg. Szabo & Soos (MWM).
1 ♂, Thailand, Ranong, 500 m, Mai 2002, ex coll. S. Loeffler (RYB).

Duomitus BUTLER, 1880

15. *Duomitus ceramicus* (WALKER, 1865) (map 5)

Zeuzera ceramica WALKER, 1865, List Lep. Het. Brit. Mus. **32** [supplement 2]: 587.

Reported for Thailand for the first time.

Material
3 ♂♂, Thailand, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII.99, leg. TIBOR CSOVARI & LASZLO MIKUS (MWM).
1 ♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 29.-30.III.1998, leg. CSOVARI & STEGER (MWM).
1 ♂, Thailand, Changwat Nan, 8 km W of Pha Lak, 800 m, 17.VI.1998, leg. SZABO & SOOS (MWM).
1 ♂, Thailand, Umg. Pak Chong, Khao Yai N.P., 4.-22.IX.98, leg. S. LOEFFLER (MWM).
1 ♂, Thailand, Chaiyaphum, Thepsatit, 17.IX.88 (MWM).
1 ♂, Thailand, Prov. Kanchanaburi, 34 km NE Sisawat, 700 m, 03.V.2002, leg. GÖRGNER & IHLE (RYB).
1 ♂, Thailand, Sakhou Kakhou, Phu Pau NP, 25.VI.2003, ex coll. S. LOEFFLER (RYB).

Phragmataecia NEWMAN, 1850

16. *Phragmataecia impura* HAMPSON, 1891

HAMPSON, 1891, Ill. Lep. Het. Brit. Mus. **8**: 66.
SCHOORL, 1990: 116.

Reported by SCHOORL (1990) for Thailand without specification of locality.

***Lakshmia* gen. nov.**

Type species: *Lakshmia zolotuhini* spec. nov.

Description
Male. Moths of intermediate size. Antenna with bilobate processes on articles, with a gradual transition from proximal part with long processes to distal part with very short processes. Thorax and abdomen densely pubescent, thorax with light hairs, abdomen with grey hairs, with light hairs at segment joints. Abdomen very long. Forewing yellowish-brown with a pattern in medial area; hindwing grey, fringe chequered.
Male genitalia. Uncus short, pointed, tegumen triangular, valvae almost rectangular, without teeth or crests. Juxta with two lateral processes, 1.5 times exceeding valva width in length, and two narrow processes between them. Saccus weakly developed. Aedeagus wide, very short, with a folded zone at middle. Vesica without cornuti.
Female. Wing pattern as in male but simplier. Abdomen long, with a protruding ovipositor. Antennae simple, without processes on articles.

Female genitalia. Apophyses anteriores fuse with each other in the distal part, ovipositor apex widely rounded with an incision at the middle. Apophyses aposteriores long, protruding far behind segment VIII and reaching middle of apophyses anteriores. Vaginal plate long-ellyspoid. Ostium membranous, ductus membranous, in length comparable with anthrum. Bursa ellipsoid with a thread of longitudinal sclerotization; ductus seminalis sprouts from central part of bursa, reservoir being about half as small as bursa.

Diagnosis
The new genus belongs to the subfamily Zeuzerinae Boisduval, [1828] and is most close to the genus *Phragmataecia* Newman, 1850 from which differs by the following characters:
- a smooth change in length of processes on antennal articles in males (in *Phragmataecia* this change is abrupt at about middle of antenna)
- simple antennae in females (in *Phragmataecia* females have small processes)
- presence of wing pattern
- different juxta structure
- smaller saccus
- relatively smaller aedeagus with another structure (with a longitudinaly folded zone and without cornuti).
- longer apophyses aposteriores, ostium and anthrum
- different shape of vaginal plate (in *Phragmataecia* it is quadrangular).

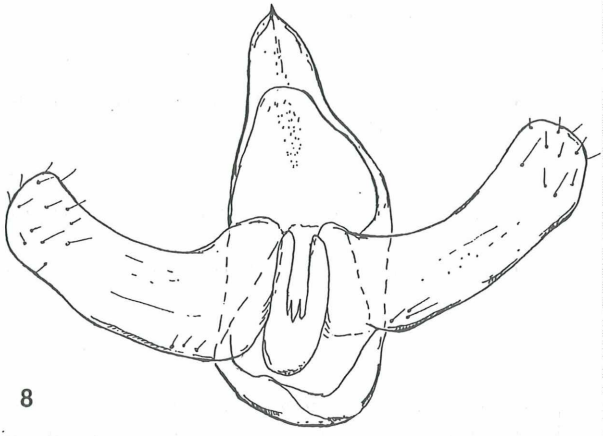
Range
Representatives of the new genus have been recorded so far only from Thailand (Provinces Changwat Nan, Changwat Chiang Mai, Changwat Phayao), where they were collected at 450–1100 m above sea level.

Etymology
"Lakshmi", a personage of the Induist epos Ramayana, genus femininum.

17. *Lakshmia* ***zolotuhini*** **spec. nov.** (colour plate XVI, fig. 5, 6; text figs. 5–7; map 6)

Material
Holotype ♂: Thailand, Changwat Nan, 5 km E of Bo Luang, 610 m, 23.XI.1998, leg. Tibor Csovari & Laszlo Mikus (MWM).
Paratypes
1 ♂, Thailand, Changwat Chiang Mai, 6 km SE of Pang Faen, 1100 m, 29.XI.1998, leg. Tibor Csovari & Laszlo Mikus (GenPr Het – 9018 MWM).
3 ♀♀, Thailand, Changwat Phayao, 15 km SE Chiang Muan, 640 m, 26.XI.1998, leg. Tibor Csovari & Laszlo Mikus (GenPr Het – 9056 MWM).
1 ♂, Thailand, Chiangmai, Mae Sa valley, km 24, 1100 m, 28.XII.1988, leg. Schmitzler (ZFMK).

Description
Male. Forewing length 22–24 mm. Forewing with a brown spot in medial area, from above and inner side rimmed with a dark line; adjacent to wing outer margin there is a greyish-lilac spot. Forewing fringe chequered, brown at vein tips and yellow between them. Hindwing dark-grey,



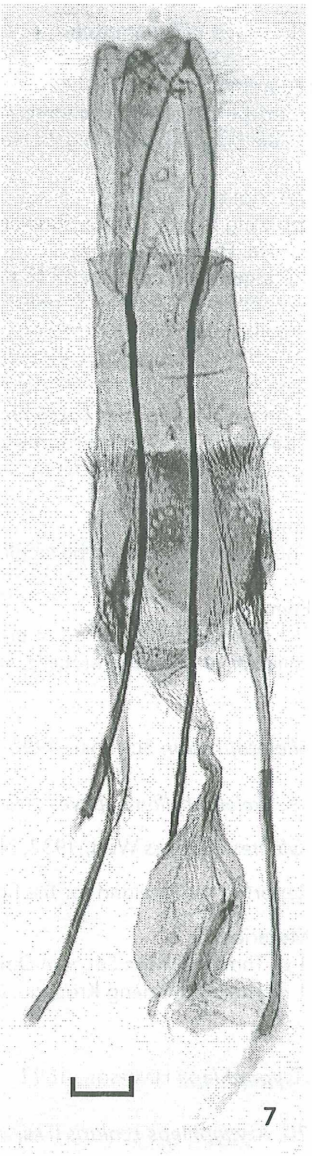


Fig. 7: Female genitalia of *Lakshmia zolotuhini* spec. nov., lateral projection.
Fig. 8: Male genitalia of *Lakshmia hauensteini* spec. nov., frontal projection.

densely pubescent with yellow hairs in anal area. Hindwing fringe chequered at apex, closer to the anal margin it becomes evenly coloured.
Male genitalia correspond to the generic diagnosis. Tegumen wide, uncus pointed apically, narrow and hapreshaped.
Female genitalia: see the genus description.

Diagnosis
From the close species *Lakshmia hauensteini* spec. nov. well differing in larger size, longer valva, a different uncus shape, a wider tegumen, a longer forewing and a dark hindwing.

Range
Thailand (Prov. Changwat Nan, Changwat Chiang Mai, Changwat Phayao).

Habitat
Collected in forests at 610–1100 m above sea level.

Etymology
The new species is named after the well known Russian entomologist Dr. VADIM ZOLOTUHIN (Ulyanovsk), a specialist in Macroheterocera who greatly helped at all stages of my work and provided very useful consultations.

18. *Lakshmia* ***hauensteini*** **spec. nov.** (colour plate XVI, fig. 7; text fig. 8; map 6)

Material
Holotype ♂: North Thailand, Prov. Chiang Mai, 450 m, Mok Fa Garden Resort, 98°48' E; 19°06' N, 01.XI.2002, leg. B. Herczig et G. Ronkay (AHC).

Description
Forewing length 20 mm. Forewing light-yellow resembling that in the previous species but very diffuse. Hindwing yellow.
Male genitalia correspond to the generic diagnosis but the tegumen is narrow, the uncus is wide although pointed at apex.
Female unknown.

Diagnosis
From the close species *Lakshmia zolotuhini* spec. nov. well differing in the following characters: a smaller size, a shorter forewing with a diffuse pattern, a light hindwing, a shorter valva, a less broad tegumen, different shape of uncus.

Range
Known only from the type locality.

Etymology
The new species is named after Armin Hauenstein (Germany), a well known entomologist and collector of Macroheterocera, who kindly offered material of his collection for investigation.

Skeletophyllon Schoorl, 1990

19. *Skeletophyllon euphyes* (West, 1932) (map 6)

Xyleutes euphyes West, 1932, Novit. Zool. **37**: 219.

Reported for Thailand for the first time.

Material
1 ♂, Thailand, Mae Sot, von Doi Massoe, 800 m, 10.III.2002, ex coll. S. Loeffler (RYB).
1 ♂, Thailand, Kueng Krachau, 600 m, 3.IV.2002, ex coll. S. Loeffler (RYB).

Azygophleps Hampson, 1892

20. *Azygophleps scalaris* (Fabricius, 1775) (map 6)

Phalaena (Hepialus) scalaris Fabricius, 1775, Syst. Ent.: 590.
Tams, 1924: 278.

Reported by Tams (1924) with one male from Chumporn, 10.I.16.

Acknowledgements
The author is grateful to all persons who offered their collections for investigation: T. Witt (Munich), A. Hauenstein (Untermünkheim), Dr. W. Mei (Berlin), Dr. D. Stüning (Bonn), Dr. A. Hausmann (Munich), S. Loeffler (Liechtenstein). Valuable consultations were provided by Dr. V. Zolotuhin (Ulyanovsk), the text was translated into English with the help of Dr. O. Kosterin (Novosibirsk).

References

Schoorl, J. W. (1990): A phylogenetic study on Cossidae (Lepidoptera: Ditrysia) based on external adult morphology. – Zoologische Verhandelingen **263**: 295 pp, 1 t.

Tams, W. H. T. (1924): List of the Moths collected in Siam by E. J. Godfrey, B. Sc., F. E. S. with description of new species. – The Journal of the Natural History Society of Siam **6** (3): 278.

Explanation of colour plate XVI (p. 477):

Fig. 1: *Wittocossus mokanshanensis* (Daniel, 1945) ♂, Thailand, Chiangmai, Huew Keo National Park, Doi Suthep, 1200 m, 12.VI.–24.VI.88. leg. Schmitzler (ZFMK).
Fig. 2: *Wittocossus mokanshanensis* (Daniel, 1945) holotype (ZMFK).
Fig. 3: *Groenendaelia kinabaluensis* (Gaede, 1933) ♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 12.XI.1999., leg. Marton Hreblay (MWM).
Fig. 4: *Groenendaelia kinabaluensis* (Gaede, 1933) holotype (MHUB).
Fig. 5: *Lakshmia zolotuhini* spec. nov., holotype (MWM).
Fig. 6: *Lakshmia zolotuhini* spec. nov., paratype, ♀ (MWM).
Fig. 7: *Lakshmia hauensteini* spec. nov., holotype (AHC).

1	2
6	3
5	4
	7

address of the author

Dr. Roman V. Yakovlev
57–81, Chkalova str.
Barnaul, 656049
Russia
e-mail: yakovlev_r@mail.ru

YAKOVLEV, R. V.: Cossidae of Thailand. Part 1 (Lepidoptera, Cossidae). – Atalanta **35** (3/4): 335–351.

Fig. 1: *Wittocossus mokanshanensis* (DANIEL, 1945) ♂, Thailand, Chiangmai, Huew Keo National Park, Doi Suthep, 1200 m, 12.VI.–24.VI.88. leg. SCHMITZLER (ZFMK).
Fig. 2: *Wittocossus mokanshanensis* (DANIEL, 1945) holotype (ZMFK).
Fig. 3: *Groenendaelia kinabaluensis* (GAEDE, 1933) ♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 12.XI.1999., leg. MARTON HREBLAY (MWM).
Fig. 4: *Groenendaelia kinabaluensis* (GAEDE, 1933) holotype (MHUB).
Fig. 5: *Lakshmia zolotuhini* spec. nov., holotype (MWM).
Fig. 6: *Lakshmia zolotuhini* spec. nov., paratype, ♀ (MWM).
Fig. 7: *Lakshmia hauensteini* spec. nov., holotype (AHC).

1	2
6	3
5	4
	7

Colour plate XVI