Ten new species of *Lemyra* Walker, 1856, *Spilosoma* Curtis, 1825 and *Juxtarctia* Kirti & Kaleka, 2002 from South East Asia (Noctuoidea, Erebidae, Arctiinae)

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Abstract: Ten new species of Arctiinae from South-East Asia are described and figured: *Lemyra* ***floresina*** **sp. n.** from Flores, similar to *L. bornemontana* Holloway, 1988 (holotype male in CMWM); *Lemyra* ***lutheri*** **sp. n.** from Sulawesi, similar to *L. ypsilon* Rothschild 1910 (holotype male in CMWM); *Lemyra* ***basirosea*** **sp. n.** from Myanmar (holotype male in CMWM), similar to *L. alleni* Thomas, 1990; *Lemyra* ***deumeri*** **sp. n.** from Sumatra (holotype male in CMWM), similar to *L. extensa* Walker, 1856; *Lemyra* ***atrata*** **sp. n.** and *Lemyra* ***miniatrata*** **sp. n.** (both male holotypes in CMWM), both from Thailand and related to *Lemyra jiangxiensis* Fang, 1990; and *Lemyra* ***dendrovia*** **sp. n.** (holotype male in CMWM) and *Lemyra* ***ramosula*** **sp. n.** (holotype male in SMFL), both from Sumatra and related to each other; as well as *Spilosoma* ***submargininigra*** **sp. n.** from Thailand (holotype male in CMWM), and *Juxtarctia* ***lizae*** **sp. n.** from Laos (holotype male in SMFL), both being unmistakable.

Zehn neue Arten von *Lemyra* Walker, 1856, *Spilosoma* Curtis, 1825 und *Juxtarctia* Kirti & Kaleka, 2002 aus Südostasien (Noctuoidea, Erebidae, Arctiinae)

Zusammenfassung: Zehn neue Arten der Unterfamilie Arctiinae werden aus Südostasien beschrieben und abgebildet, und zwar: *Lemyra* ***floresina*** **sp. n.** aus Flores, ähnlich zu *L. bornemontana* Holloway, 1988 und *Lemyra* ***lutheri*** **sp. n.** aus Sulawesi, ähnlich zu *L. ypsilon* Rothschild, 1910 (beide männliche Holotypen [HT] in CMWM); *Lemyra* ***basirosea*** **sp. n.** aus Myanmar (männlicher HT in CMWM), ähnlich der *L. alleni* Thomas, 1990; *Lemyra* ***deumeri*** **sp. n.** von Sumatra (männlicher HT in CMWM), ähnlich der *L. extensa* Walker, 1856; *Lemyra* ***atrata*** **sp. n.** und *Lemyra* ***miniatrata*** **sp. n.** (beide männlichen HTs in CMWM), beide aus Thailand und verwandt mit *Lemyra jiangxiensis* Fang, 1990 aus China; *Lemyra* ***dendrovia*** **sp. n.** (männlicher HT in CMWM) und *Lemyra* ***ramosula*** **sp. n.** (männlicher HT in SMFL), beide aus Sumatra und miteinander verwandt; sowie *Spilosoma* ***submargininigra*** **sp. n.** aus Thailand (männlicher HT in CMWM) und *Juxtarctia* ***lizae*** **sp. n.** aus Laos (männlicher HT in SMFL), beide unverwechselbar.

Introduction

Routine checking of the Arctiinae specimens deposited in the collection of Museum Thomas Witt, Munich, of the Heterocera Sumatrana Society and of my own private collection, as well as of currently received material from Thailand revealed a number of tiger-moth species which require being described. In the present paper some species of the genera *Lemyra* Walker, 1856, *Spilosoma* Curtis, 1825 and *Juxtarctia* Kirti & Kaleka, 2002 are described, all of them found in a few specimens only.

Abbreviations

CKC	coll. Karel Černý, Innsbruck, Austria.
CHD	coll. Heiko Deumer, Bad Vilbel, Germany.
CMWM	coll. Museum Thomas Witt, München (Munich), Germany.
fw.	forewing.
GP [no.]	genitalia preparation slide/vial [no.].
HT	holotype.
hw.	hindwing.
lfw.	length of forewing.
PT	paratype.
SMFL	Senckenberg-Museum, Lepidoptera collection, Frankfurt am Main, Germany.
uns.	underside.
ups.	upperside.

Lemyra floresina sp. n.

(Figs. 1a, 1b, 11.)

Holotype ♂: Indonesien, Flores W., Prov. Nusa Tenggara Timur, Ranggawatu, Telekom-Stat., 900 m, 33 km E Labunanbajo, 12. iv. 1996, Prim.-Wald, leg. Dr. R. Brechlin, CMWM. – No paratypes.

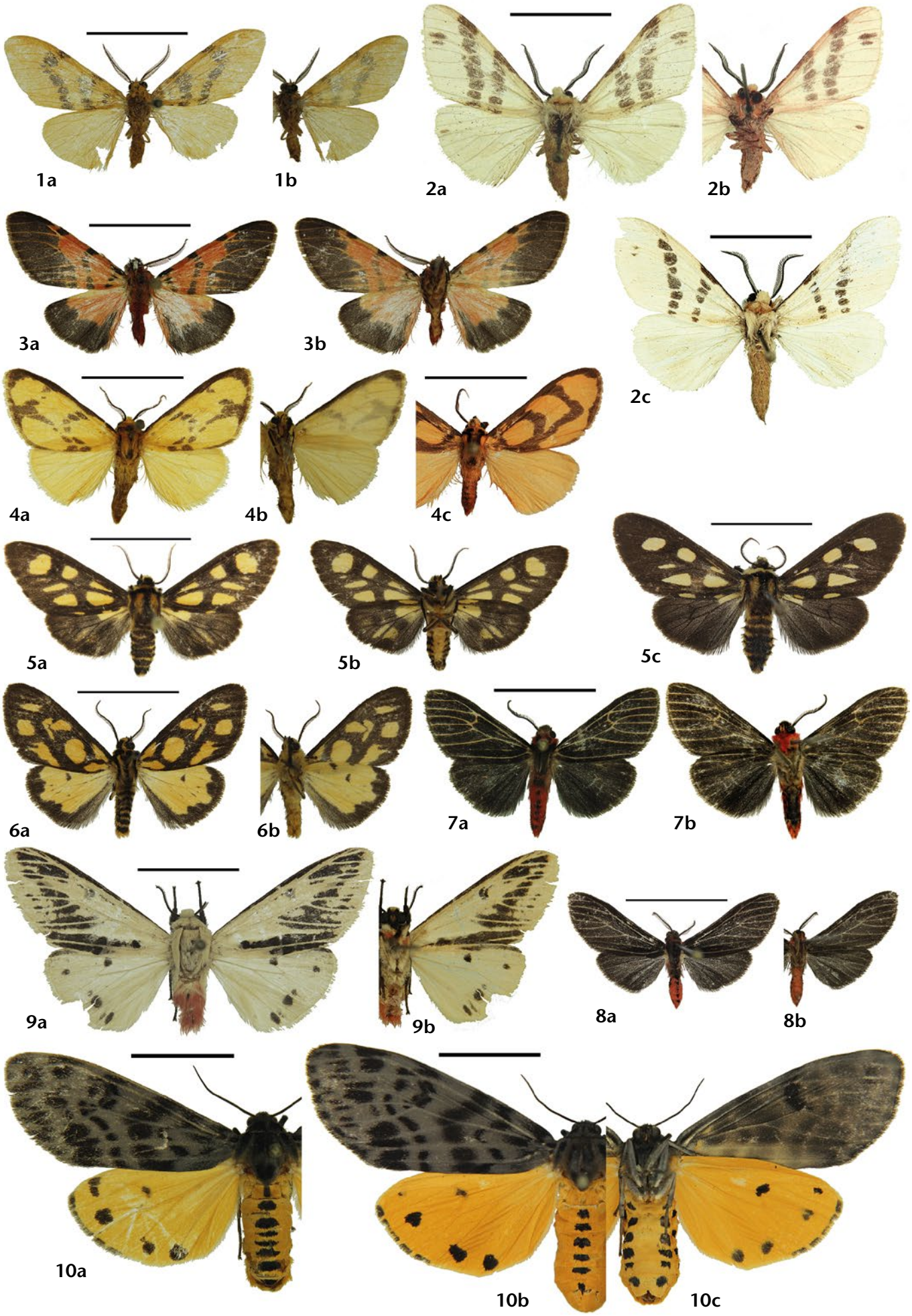
Etymology: Named for its origin on the island of Flores, Indonesia.

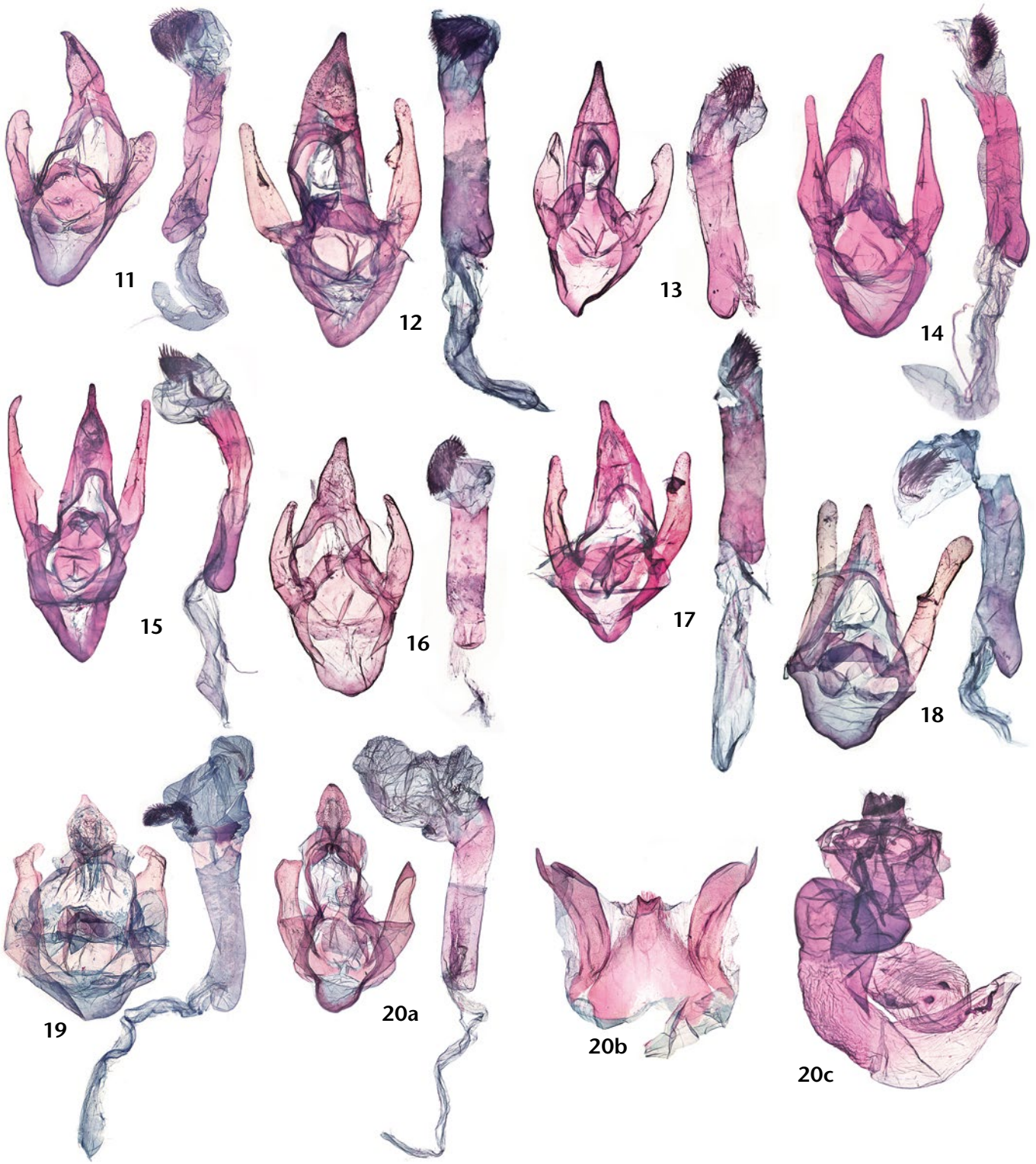
Diagnosis

The ground colour of the head with tegulae and of the thorax with patagia is pale ochre; the bipectinate antennae are pale brown, the legs and the abdomen are reddish brown. The lfw. is 13 mm. The ground colour of the fw. is beige with three transversal bands composed of grey spots. The subbasal one consists of two spots near of the inner margin, the antemedian one consisting of six spots is bent outwards, the postmedian one beginning on two thirds of the costal margin runs rectangular from the costa to the discocellular and further parallel with the outer margin to the inner margin. The uns. is paler, the markings are less clear. The hw. bear no markings, the ground colour is the same like on the fw. The fringes have the same colour like the wings.

♂ genitalia (GP T260): Phallus is straight without specific structures, on the phallus vesica there is a large field of enclosed spines. The valves are short and wide with a short projection medially.

Similar species: *Lemyra floresina* sp. n. looks like *L. bornemontana* Holloway, 1988, which is larger and has the antennae black. The area with spines on the phallus vesica is in *L. bornemontana* much smaller, the valve is in *L. bornemontana* narrower and prominent, the medial projection is placed in the middle whereas it is placed terminally in *L. floresina* sp. n.





Figs. 1–8: Imagines, *Lemyra* spp. (usually a = ups., b = uns.). **Figs. 1a, 1b:** *Lemyra floresina* sp. n., HT ♂, Flores. — **Figs. 2a, 2b:** *L. lutheri* sp. n., HT ♂, Sulawesi. **Fig. 2c:** PT ♂, Sulawesi. — **Figs. 3a, 3b:** *L. basirosea* sp. n., HT ♂, Myanmar. — **Figs. 4a, 4b:** *L. deumeri* sp. n., HT ♂, Sumatra. **Fig. 4c:** PT ♂, Sumatra. — **Figs. 5a, 5b:** *L. dendrovia* sp. n., HT ♂, Sumatra. **Fig. 5c:** PT ♂, Sumatra. — **Figs. 6a, 6b:** *L. ramosula* sp. n., HT ♂, Sumatra. — **Figs. 7a, 7b:** *L. atrata* sp. n., HT ♂, S. Thailand. — **Figs. 8a, 8b:** *L. miniatrata* sp. n., HT ♂, N. Thailand. — **Figs. 9–10:** Specimens of *Spilosoma* and *Juxtarctia*. **Figs. 9a, 9b:** *Spilosoma submargininigra* sp. n., HT ♂, Thailand. — **Fig. 10a:** *Juxtarctia lizae* sp. n., HT ♂, Laos, ups. **Figs. 10b, 10c:** *J. lizae* sp. n., PT ♀, ups./uns., Laos. — Scale bars = 1 cm (i.e., approximately twice natural size; uns. sometimes slightly smaller).

Figs. 11–18: ♂ genitalia of new *Lemyra* spp., genitalia and phallus. **Figs. 11:** *Lemyra floresina* sp. n. — **Figs. 12:** *L. lutheri* sp. n. — **Figs. 13:** *L. basirosea* sp. n. — **Figs. 14:** *L. deumeri* sp. n. — **Figs. 15:** *L. dendrovia* sp. n. — **Figs. 16:** *L. ramosula* sp. n. — **Figs. 17:** *L. atrata* sp. n. — **Figs. 18:** *L. miniatrata* sp. n. — **Figs. 19:** *Spilosoma submargininigra* sp. n. — **Figs. 20a, b:** *Juxtarctia lizae* sp. n., **a** = ♂ genitalia and phallus, **b** = ♂ pregenital segment; **Fig. 20c:** *J. lizae* sp. n. ♀ genitalia. — Genitalia pictures not to the same scale.

Lemyra lutheri sp. n.

(Figs. 2a, 2b, 2c, 12.)

Holotype ♂: Indonesien, Sulawesi (S), Puncak Palopo, x. 1994, leg. local collector, ex coll. Dr. R. Brechlin, CMWM.

Paratypes (in total 6 ♂♂): 3 ♂♂, like holotype, but CKC. 3 ♂♂, Indonesien, Sulawesi, Puncak, Palopo, vi. 1998, leg. local collector, CMWM.

Etymology: The species is dedicated to Mr. Luther Palimbong, the owner of the guest-house in Puncak near Palopo on whose terrace the examined specimens were collected.

Diagnosis

The ground colour of the head with thorax and patagia is cream-coloured, palpi and antennae are dark brown, tegulae and abdomen are pale yellow, the legs are beige, the first pair with pale yellow hairs.

The lfw. is 16 mm. The wings are cream-coloured with markings similar to that of *Lemyra ypsilon* Rothschild, 1910, but the transversal series of dark spots are straight or slightly incurved whereas they are excurved in the cell in *L. ypsilon*.

♂ genitalia (GP T280): The ♂ genitalia are very similar to those of *L. ypsilon,* but the valvae are significantly smaller; the spines on the phallus vesica are less numerous and the group of spines is longitudinal whereas it is rather triangular in *L. ypsilon*.

Similar species: *Lemyra ypsilon,* in which the antennae and legs are darker, the abdomen is dorsally red, on the hindwings there are dark markings in tornus and the markings on the forewings are different. The differences in the ♂ genitalia are described above.

Lemyra ***basirosea*** **sp. n.**

(Figs. 3a, 3b, 13.)

Holotype ♂: Myanmar (Burma), 21 km E. Putao, Nan Sa Bon village, 560 m, 1.–5. v. 1998, leg. Murzin & Sinjaev, CMWM.

Paratype: 1 ♂, like holotype, but CKC.

Etymology: The name describes the specific markings of the forewings (basirosea = pink in the basal area).

Diagnosis

The ground colour of the head with tegulae and of the thorax with patagia is pale ochre; the bipectinate antennae are pale brown, the legs and abdomen are reddish brown.

The lfw. is 13 mm, the basal half is pink with a subbasal series of brown points arising rectangularly on the costal edge and running straight to the inner margin. The medial series of brown spots runs from the costal edge to the cell where it is bent and leads on to the inner margin. The submarginal series is nearly fully confluent with the wide marginal band, only near of the inner margin are some spots of that series as isolated points visible. The veins are in the wide marginal band marked with pink. The fringes are brown. The uns. of the fw. is pink with a very wide brown edge; the subbasal and the median bands are reduced to a dark spot on the costal edge each. The hw. are pink, widely edged with brown; the fringes are brown.

♂ genitalia (GP T261): The male genitalia are typical for the genus *Lemyra* Walker, 1856. The valva is short, proximally enlarged. The phallus is straight, on the phallus vesica there are two elongated scobinations and a rounded group of short spines.

Similar species: The species resembles *Lemyra alleni* Thomas, 1990 from Thailand but it differs significantly by the wide marginal bands on the forewings and the hindwings. In the ♂ genitalia the valve is more pointed in *L. alleni* and the group of spines on the phallus vesica is significantly larger in *L. basirubra* sp. n.

Lemyra ***deumeri*** **sp. n.**

(Figs. 4a, 4b, 4c, 14.)

Holotype ♂: Indonesia, West-Sumatra, Harau Valley, 10 km NW Payakumbuh, Sekundärwald/Kulturlandschaft, 400 m, 27. ii. 1995, LF, leg. H. Deumer & Schaarschmidt, CMWM.

Paratype: 1 ♂, like holotype, but CHD.

Etymology: The species is dedicated to Heiko Deumer, Bad Vilbel, Germany, who collected the described specimens.

Diagnosis

The head and thorax are yellow, the bipectinate antennae dark brown, palpi brown, patagia slightly suffused with grey, legs yellow, terminally black; abdomen dirty yellow.

The lfw. is 13 mm, the ground colour is yellow, the costal edge is black, the outer edge and outer part of the inner margin are dark brown, suffused with yellow scales, the antemedian brown band is bent outwards and consists of six brown, yellowish suffused spots; the postmedian band arises on two thirds of the costa, runs to the middle of the outer margin, touches it and runs on to the middle of the inner margin. It consists of eight brown spots, suffused with yellow scales, the greatest of them is the marginal one. The underside of the fw. is yellow, the costal edge is black, the outer margin dark brown; the hw. are yellow with yellow fringes.

Variability: The second known specimen is slightly smaller, the spots in the wing markings are confluent to lines.

♂ genitalia (GP T266): The valve is simple, becoming narrow terminally with a small cone projection on the costa; the phallus is straight with a rounded field of spines on the phallus vesica.

Similar species: *Lemyra deumeri* sp. n. is similar to *L. extensa* Walker, 1856 from Sulawesi in which the postmedian band does not reach the outer margin, the outer edge is wider and the hindwings are edged with black.

Lemyra ***dendrovia*** **sp. n.**

(Figs. 5a, 5b, 5c, 15.)

Holotype ♂: Sumatra sept. (Simalungun), „Holzweg 2“, 1050 m, 28 km SW Siantar, 98°59’ E, 2°46’ N, 17. iii. 1990, leg. Dr. E. W. Diehl, CMWM.

Paratype: 1 ♂ N. Sumatra, Prapat, HW 2 [= Holzweg 2], 15. ii. 1986, Dr. Diehl leg., CKC.

Etymology: dendrovia = Holzweg (from ancient Greek: δένδρον [dendron] = tree and Latin: via = street, road, for the locus typicus “Holzweg” [HW] = logging path, logging road – a series of standard collecting localities of the late E. W. Diehl abbreviated “HW [no.]”).

Diagnosis

The head is dirty yellow with dark brown top, palpi are dark brown, eyes dark brown, antennae dorsally dark brown, terminally yellow, ventrally dirty yellow; patagia are dirty yellow, thorax is dorsally dark brown, ventrally

pale brown; tegulae are dark brown, edged with dirty yellow hairs; the legs are dark brown with yellow claws; the abdomen is dorsally dark brown with fine yellow halfrings, ventrally it is dirty yellow.

The lfw. is 14 mm, the ground colour is dark brown, its markings consist of yellow patches: In the basal area there is a triangular patch pointed towards the base and a fine strip between Cu and Ra. In the medial area there is an elliptical patch near the costa, an elongate strip in the middle, a triangular patch with the top towards tornus and a very fine strip near the inner margin; between the medial series of patches and the apex there is a large rounded patch. The fringes are dark brown, not differing of the ground colour of the wing. The hw. are dark brown with short yellow weals near the base. The uns. is similar to the ups. but on the hw. there are two additional yellow strips in the medial area.

Variability: The paratype is similar to the holotype, but the yellow markings on the forewings are smaller, the most apical patch is rather elliptical and the two yellow stripes on the medial area of the hindwings are not developed.

Note: A single possible ♀ of the new species collected by Bucsek in Peninsular Malaysia (personally seen in his collection) differs in the wing markings and the conspecifity is not yet confirmed.

♂ genitalia (GP T267): The general construction of the ♂ genitalia is typical for the genus. The valve is long and narrow with a slightly bent proximal part and a small medial projection on the end of the basal third. The phallus is bent, the phallus vesica bears a narrow, slightly bent band of short spines and a multangular group of larger ones.

Lemyra ramosula sp. n.

(Figs. 6a, 6b, 16.)

Holotype ♂: W. Sumatra, 7 km E Pantl, 0°12' N, 100°1' E, 16. ix. 1991, Primärurwald, 1000 m, leg. Graul & Schintlmeister, SMFL.

Paratypes (in total 7 ♂♂): 1 ♂, like holotype, but CKC. 2 ♂♂, W. Sumatra, Mt. Talamau, Westseite, 12 km S Talu, 0°8' N, 99°59' E; 10. ix. 1991; Sekundärwald/Reisfeld, 500 m; leg. Graul & Schintlmeister, CKC. 2 ♂♂, Indonesia; Sumatra (Batakland), HW 2 [= Holzweg 2] (1050 m); 2°47' N, 89°56' O; 13./31. iii. 1993; Dr. Roland Brechlin, CKC. 1 ♂, Sumatra, Prapat, HW 2 [= Holzweg 2]; 1050 m; 6. xi. 1990, Dr. Diehl leg., CMWM. 1 ♂, N. HW 3 [= Holzweg 3], 25. xii. 1989 (= Sumatra, Prapat, leg E. Diehl – comment of the author), CKC.

Etymology: ramosula = small with branched markings.

Diagnosis

The head is yellow with dark brown top and a similar shadow between the eyes, the palpi are laterally dark brown, medially rather yellow, the antennae are bicombed, dorsally dark brown; tegulae are yellow with two dark brown moon-like spots; thorax is dorsally dark brown, ventrally yellow, the patagia are dark brown, edged with some yellow hairs, the legs are laterally dirty yellow and medially grey-brown; the abdomen is dorsally dark brown with dirty yellow clefts and ventrally dirty yellow.

The fwl. is 13 mm (expanse 25 mm), fw. dark brown with yellow patches. In the basal area there are two nearly equally elongate spots; in the antemedian area there is a large rounded patch; in the medial area there is an irregular patch near the costa, laced in the middle. Between the median area and the outer margin there are three patches of which the nearest to apex is elongated, the median one is rounded and the tornal one is irregular, elongated with indentations towards outer margin.

The hw. are yellow with an irregular dark marginal band, a lunular spot in the cell and some dark points in the submarginal area. The fringes are dark brown. The uns. is paler, the dark markings are suffused with yellow.

Variability: The lfw. varies slightly between 12 and 13 mm, the first patch in the antemedian area is sometimes divided and the submarginal spots on the hindwing are occasionally not present or more intensively expressed.

♂ genitalia (GP T294): The valve is short and narrow, the phallus is straight, on the phallus vesica there is an irregular group of spines which is partially everted already before the preparation.

Lemyra atrata sp. n.

(Figs. 7a, 7b, 17.)

Holotype ♂: SW Thailand, Chumphon, 162 m, Pa Toh, Ban Lang Tang, 9°46'5″ N, 98°46'59″ E; 31. i. 2009, leg. T. Ihle; CMWM. – No paratypes.

Etymology: atrata [Latin] = covered in black.

Diagnosis

The ground colour of the head with the bipectinate antennae and palpi is black with some red hairs on vertex; tegulae are red with two black spots; thorax is dorsally black, ventrally grey with a red sternal part; the long hairs on the patagia are black and grey; the legs are grey laterally and greyish ochre medially; the abdomen is dorsally red with a series of black dots, ventrally black with red tip.

The lfw. is 12 mm, the ground colour is black, suffused with some white scales, the fringes are black, the veins are on the ups. pale ochre, on the underside less striking. The hw. are black, suffused with some white scales.

♂ genitalia (GP T250): The valva is long, widening terminally; phallus is straight, phallus vesica with a rounded group of spines.

Similar species: *Lemyra neurica* Hampson, 1911, which is significant larger and has head, thorax and legs ochre and abdomen orange. There are significant differences in genitalia. And *Lemyra jiangxiensis* Fang, 1990, which is significant larger, has narrower wings and the veins on the forewing are not white. The ♂ genitalia are similar to

that of *Lemyra jiangxiensis,* but the valvae are longer and more widening terminally.

Lemyra miniatrata sp. n.

(Figs. 8a, 8b, 18.)

Holotype ♂: W. Thailand, Tak, Doi Musoe, 812 m, 16° 45.369 N, 98°56.404' E, 6. IX. 2009, leg. T. IHLE, CMWM. – No paratypes.

Etymology: The species is very similar to *L. atrata* sp. n., but smaller.

Diagnosis

The ground colour of the head with the bipectinate antennae and tegulae is black, the palpi are black laterally and reddish brown medially and in their basal part. The thorax is dorsally black with black patagia, ventrally pale brown with pale brown legs; the abdomen is dorsally red with a series of black dots, ventrally red.

The forewings are quite narrow, 11 mm long, their ground colour is black, suffused with some white scales and black fringes, the veins are dirty white. The hw. are black, suffused with some white scales, the veins are inconspicuous, dirty white.

♂ genitalia (GP T249): The genitalia are very similar to those of *Lemyra jiangxiensis,* as figured in FANG (2002).

Similar species: *Lemyra atrata* sp. n., which is larger, has a different form of the fw. and a red sternal part of the thorax. The abdomen is ventrally red in *Lemyra miniatrata* sp. n. and black in *L. atrata* sp. n.

Spilosoma submargininigra sp. n.

(Figs. 9a, 9b, 19.)

Holotype ♂: C. Thailand, Phetchabun, Nam Nao NP (border); Lom Salo 675 m, 16°44.551' N, 101°26' E, 16. x. 2007, leg. Thomas IHLE; CMWM. – No paratypes.

Etymology: The name describes the distribution of the dark markings on the forewing.

Diagnosis

Head and thorax are cream white, palpi and the bipectinate antennae are black, the legs are cream white with tibia and tarsi grey-brown. Abdomen is pink.

The lfw. is 18 mm, its ground colour is cream white. The costal edge is black, getting wider terminally; one dark spot in the cell, one black strip in the outer half of the area between A_1 and the inner margin and another long one between the A_1 and Cu_2, reaching the subbasal area. In the submarginal area there is an irregular black patch interrupted in many parts, especially on the veins. The fringes are cream white. The uns. is like the ups., the dark markings are suffused with white, the dark spot in the cell is more expressive.

The hw. and their fringes are cream white with a black spot in the discocellular, a black strip on the inner margin and a series of black spots in the postdiscal area.

♂ genitalia (GP T245): The uncus is tube-like, narrowing basally; the valvae are wide and short with a short ventral projection, the proximal part is nearly rectangular. The phallus is irregular, strongly sclerotised proximally; on the phallus vesica there is a proximal scobination with some very short spines and two longitudinal groups of spines of which the basal one consists of about 50 strong spines and the lateral one of about 100 fine spines.

Similar species: There is no similar species known from Thailand. In Uzbekistan, *Spilosoma melanostigma* ERSCHOFF, 1872 occurs, which is a little bit similar, but the dark markings are found also in the basal part of the forewing.

Juxtarctia lizae sp. n.

(Figs. 10a, 10b, 10c, 20a, 20b, 20c.)

Holotype ♂: Laos, prov. Khammouane, Muang Gnomarat, 150 m, 105°9.778' E, 17°33.259' N, 22. v. 2013, leg. Z. WEIDENHOFFER & T. IHLE, SMFL.

Paratypes, all **Laos:** ♂ like holotype, but 1. VI. 2014, leg K. ČERNÝ, CKC. 1 ♀, Laos, prov. Khammouane, Muang Khai, 160 m, 104°54.980' E, 17°27.681' N, 21. v. 2013, leg. Z. WEIDENHOFFER & T. IHLE, CKC. 1 ♀, same data, but 28. v. 2014, leg K. ČERNÝ, CKC. 1 ♂ prov. Khammouane, Khoun Ngeun, Sala Viewpoint, 480 m, 104°29' E, 18°10,7' N, 30.–31. v. 2014, leg K. ČERNÝ, CKC.

Etymology: The species is dedicated to Liza, daughter of Thomas IHLE, my good friend who helped to collect the known specimens.

Diagnosis

The ground colour of the head, tegulae and thorax with patagia is grey, with blurred black spots, the slightly sawed antennae black, legs grey; abdomen yellow with a dorsal series of black transversal dots and two series of black ventral spots.

The lfw. is 25 mm, its ground colour is grey, the fringes grey. The markings consist of six transversal series of black spots situated like in the species-group of *J. multiguttata* WALKER, 1855. The uns. is unevenly grey with a single black spot in the cell. The hw. are yellow with a black spot in cell, a series of four submarginal rounded spots and black fringes in the frontal half of the wing.

♀: Like the ♂, but with a variable lfw. of 23–26 mm.

♂ genitalia (GP T269): Similar to the rest of the *J. multiguttata* group but significantly larger, phallus is proximally sclerotised with an apparent thorn, the phallus vesica with some scobinations and a group of 10 short spines. Uncus is very wide, basally strangled, the valvae are without projections, proximally cut off.

♀ genitalia (GP T277): The bursa copulatrix consists of two big lobes, the smaller one has three small rounded signa.

Variability: The examined specimens show rather small variability in their wing markings.

Similar species: The structure of the markings on the body and wings is very similar like in the group of *J. multiguttata,* but because of the grey ground colour any confusion is next to impossible.

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