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**New and poorly known species of Nolidae from SE Asia.
Investigations on Asian Nolidae II ***
(Lepidoptera, Nolidae)

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Abstract

The paper contains the analysis of the taxonomic status of three poorly known species of the genus *Meganola* DYAR, 1898: *Meganola ascripta* (HAMPSON, 1894), *Meganola cuneifera* (WALKER, 1862) and *Meganola ruficostata* (HAMPSON, 1896), **stat. rev.** as bona species. Three new species are described: *Meganola calligrapha* **sp. nov.** (Thailand), *Meganola albiscripta* **sp. nov.** (N-Vietnam) and *Meganola latiscripta* **sp. nov.** (S-Vietnam). (With 38 figures).

Key words: Nolidae, *Meganola*, new species, new taxonomic stati.

Zusammenfassung

Die Arbeit beinhaltet die Klärung des taxonomischen Status von drei wenig bekannten Arten der Gattung *Meganola* DYAR, 1898: *Meganola ascripta* (HAMPSON, 1894), *Meganola cuneifera* (WALKER, 1862) und *Meganola ruficostata* (HAMPSON, 1896), **stat. rev.** als bona species. Drei neue Arten werden beschrieben: *Meganola calligrapha* **sp. nov.** (Thailand), *Meganola albiscripta* **sp. nov.** (N-Vietnam) und *Meganola latiscripta* **sp. nov.** (S-Vietnam). (Mit 38 Abbildungen).

* Investigations on Asian Nolidae I. - Entomofauna 25 (18): 281-296.

Introduction

The three formerly known taxa, *Selca ascripta* HAMPSON, 1894, *Melia cuneifera* WALKER, 1862 and *Selca ruficostata* HAMPSON, 1896, had been described still in the second half of the 19th century. They are mentioned in the first catalogue dealing with the Nolidae of the World, published by HAMPSON in 1900 (in which HAMPSON synonymized *ruficostata* with *cuneifera*). The next work dealing with these species appeared more than a century later (HOLLOWAY 2003) in which the author transferred these species into the genus *Meganola* DYAR, 1898.

It can be definitely declared that the taxonomic problems concerning with these three taxa originate from the insufficient material available for the previous studies. All three species were based on their unique holotypes. The abdomen of the male holotype of *M. ascripta* has been lost therefore it is unavailable for dissection and the study of its genitalia, while the holotypes of the two other, externally very similar species, *M. cuneifera* and *M. ruficostata* belong to different sexes. Moreover, the type locality of *M. cuneifera* is Borneo (Sarawak), that of *S. ruficostata* is Bhutan, the distance between them is approximately 3.500 km in such an area where several zoogeographical borders may occur within some hundred kilometers.

Additional information now has become available by the results of the recent faunistic exploration of the Himalayan region and of Borneo. The expeditions led to these areas provided shorter or longer series of specimens belonging to the “*ascripta*-group”, opening the gate for the clarification of the taxonomic problems of this group.

On the other hand, the treatment of the large new Nolinae material from the eastern and south-eastern Asian territories put the authors' former ideas on the biogeography and distribution of the Nolinae in a new perspective. It can be demonstrated that several species, considered formerly as “endemic” to a region, have surprisingly large areas of distribution, even in case of the supposed rarities. Numerous species, recorded formerly only from a single locality (or just a few localities within a small range), have been recently found amazingly apart from their type locality, often in another zoogeographical (sub)region. Finally, the sympatric occurrence of some closely related species-pairs (or species-complexes) has also been proved, emphasizing the uncertainty of the identifications based on the “allopatric distribution” of the externally similar species.

This article contains the discussions of two separate topics: the first of them is the taxonomic definition of *Meganola ascripta* with the descriptions of three, externally similar, new species; the second is the question of the specific identity of the *Meganola cuneifera* - *M. ruficostata* species-pair.

The six species discussed below, although they are not close relatives, have certain common bionomical features. It is worth mentioning that all these species belong to the so-called “winter fauna”: the adults are on the wing from the late autumn throughout the winter to the early spring, no specimens are known from the other aspects of the year.

All these species are apparently rare, collected always seldomly even with the modern, intense methods.

The species are sexually strongly dimorphic which is expressed generally in the size of the sexes: the females are conspicuously larger than the males, since the colouration and the wing pattern are rather constant within each species.

All species found by our expeditions (*M. ascripta*, *M. calligrapha*, *M. cuneifera*, *M.*

ruficostata) were collected at light. It is important to note that these species apparently avoided the light traps and came almost exclusively to the illuminated screen. The females always are much rarer than the males, they are either less active and/or sensitive to the artificial light or they are considerably less numerous than the males. The males of all six species discussed below are known while only three of them have female examples in the material available.

The early stages and the life history of all species are unknown.

Abbreviations: BMNH = The Natural History Museum, London; HNHM = Hungarian Natural History Museum, Budapest; MWM = Museum WITT, Munich; UM = University Museum, Oxford; LGN = Nolidae genitalia slide of László M. GYULA; W = slide of the WITT Museum, Munich.

Systematic part

1. The "*ascripta*-group"

The "*ascripta*-group" as treated here comprises four, externally rather similar species. It is important to note that the "*ascripta*-group" is probably not a natural phyletic unit: the male genitalia of these four species (*M. ascripta*, *M. calligrapha*, *M. albiscripta* and *M. latiscripta*) belong to four conspicuously different types, therefore their close relationship is hardly supported (see the Figs 19-26). The main reason of their lumping into this temporary unit, besides the above-mentioned external similarity, is that one of the formerly unnamed species has been published recently as *M. ascripta*, thus, the correction and the discussion of the two other similar species in a joint paper seems as reasonable. It is worth mentioning that the true relationships of the three newly described species are still unclear. Supposedly, the category "*ascripta*-group" will not be used as a common lineage in the future works.

Meganola ascripta (HAMPSON, 1894) (Figs 7, 8, 10, 17, 23, 25)

Selca ascripta HAMPSON, 1894, Fauna of British India, Moths 2: 144. Type-locality: [India] [Nagaland] Naga Hills. Holotype male in BMNH.

Material examined: Holotype male, red ring type label, "Naga hills, 5000-6000ft., Aug.-Sept. 1889 W. DOHERTY", "*Callinola ascripta* Hmps type male" (with handwriting).

Additional material examined: Thailand. 1♂, Prov. Chiang Mai, 4 km S of Kop Dong, 99°03'E, 19°52'N, 1800 m, 29-30.X.2002 (slide No. LGN 775); 1♂, same site, but collected at 11.XI.2002 (slide No. LGN 755); 1♂, Prov. Nan, Doi PhuKa NP, between Pua and Bo Luang, 1350 m, 101°05'E, 19°12'N, 3.XI.2002 (slide No. LGN 754), leg. B. HERCZIG & G. RONKAY; 2♂♂, 5 km N of Bo Luang, 1000 m, 12.XI.1999 (slide No. LGN 817 = W 8275), leg. M. HREBLAY; 1♂, 30 km E of Pua, 1700 m, 27.II.1998, leg. M. HREBLAY & Cs. SZABÓKY. Vietnam. 1♂, Farin pass, 1600 m, 20 km NW Son-la, 103°52'E, 21°22'N, 11-13.XI.1994 leg. SINIAEV & SIMONOV (slide No. LGN 606 = W 8274). India. 1♂, Kerala, 6 km N Munnar, 1700 m, Kodalar Tea Estate, 77°04'E, 10°06'N, 14-15.IV.1997 (slide No. LGN 611 = W 8276), leg. SCHINTLMEISTER & SINIAEV (coll. HNHM and MWM).

Taxonomic comments. The genitalia of the true *M. ascripta* have never been published, due to the absence of the abdomen of the male holotype and the lack of authentic material.

The specimens published by HOLLOWAY (2003) from Borneo as *M. ascripta* represent another, externally similar species which is, however, not closely related to *M. ascripta*, according to the genital features of the two taxa. This latter species, described below as *M. calligrapha*, is also a rarity, but its known range is considerably larger than that of *M. ascripta*.

Diagnosis. *Meganola ascripta* differs from the externally most similar *M. calligrapha* by its remarkably longer pectination of the male antenna, considerably larger size, more unicolorous, shining pale grey ground colour of forewing and the diffuse dark markings, respectively (the dark lines of *M. calligrapha* are always sharply defined, indian ink drawings). The female of *M. ascripta* is still unknown, but, according to the supposed difference of the size and wingspan of the males and the females (a typical phenomenon within the genus *Meganola*), the female of *M. ascripta* could be the largest known Nolinae (s. str.).

Male genitalia (Figs 23, 25). Uncus medium-long with broad basal portion and pointed apex. Tegumen elongate-trapezoidal, with rounded penicular lobes. Fultura inferior rather short, rounded. Vinculum relatively long, broad at base, apically rounded, reversed-triangular. Valva simple, elongated, narrow, apically rounded; harpe well-developed, strongly sclerotized, elongated, knife-shaped, its dorsal margin strongly dentate. Aedeagus conspicuously long, narrow, apical section obliquely truncate and finely dentate. Vesica without cornuti.

Distribution. India: Naga Hills and Kerala; North Thailand; North Vietnam. The confirmed range of *M. ascripta* is overlapping with that of *M. calligrapha* in the Himalayas and northern Indochina.

***Meganola calligrapha* sp. nov.** (Figs 4, 5, 6, 20, 21, 26, 27)

Holotype ♂, "N. Thailand, Chiang Mai Prov., between Chiang Dao and Kariang, 900 m, 98°48'E, 19°25'N, 26.X.2002, leg. B. HERCZIG & G. RONKAY" (slide No. LGN 757 = W 8277) (coll. MWM).

Paratypes: Thailand. 1♂, with the same data as the holotype (slide No. LGN 756); 1♂, same site, but collected at 8.XI.2002; 1♂, Prov. Nan, 22 km N of Bo Luang, 1120 m, 24.I.1999 (slide No. LGN 607 = W 8278); 1♂ 1♀ (slide No. LGN 608 = W 8279), Prov. Mae Hong Song, 10 km NE of Pai, 1560 m, 28.I.1999; 1♂, Prov. Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 19.I.1999, leg. A. SZABÓ & Z. CZERE; 1♂, Prov. Chiang Mai, 7 km W of Pa Pae, 1230 m, 27.XI.1998, leg. T. CSÖVÁRI & L. MIKUS; 1♀, Prov. Chiang Mai, 15 km SW Wiang Haeng, 1400 m, 9.II.1998, leg. M. HREBLAY & Cs. SZABÓKY; 1♀, Prov. Chiang Mai, 23 km NW Sop Kha, 1650 m, 14.I.2004, leg. A. SZABÓ & P. HENTSCHEL (coll. HNHM, Budapest and MWM, Munich). Nepal. 1♂, Annapurna Himal, Sudame, 1250 m, 24-25.III.1995, 83°45'E, 28°20'N (slide No. LGN 609 = W 8280); 1♀, Dhumre, Bhimal Nager, 500 m, 26-28.III.1995, 84°26'E, 27°55'N, leg. M. HREBLAY & L. NÉMETH (slide No. LGN 610 = W 8281) (coll. MWM, Munich). Taiwan. 2♂♂, Prov. Nantou, 3 km E of Tili, 555 m, 8-9.II.1997 (slide No. LGN 612 = W 8282 and LGN 805 = W 8283), leg. S. SIMONYI & P. STÉGER; 1♂, Prov. Pingtung, Huang Lion Forest Recreation Area, 210 m, 6.III.1996 (slide No. LGN 605 = W 8284), leg. Gy. FÁBIÁN & L. NÉMETH; 1♂, Prov. Taoyuan, 16 km E of Fuhsing, 900 m, 121°27'E, 24°50'N, 30.XI.-1.XII.1997, leg. S. SIMONYI & A. SZABÓ (slide No. LGN 806 = W8285)

(coll. MWM, Munich). Borneo. 8 specimens, Sarawak Gunong Mulu Nat. Park, G. Api, 900 m; 2 specimens, Gunong Mulu Nat. Park, Mulu, 1000 m (coll. BMNH, London).

Diagnosis: The new species differs from *M. ascripta* by its considerably smaller size (wingspan 18-23 mm, length of forewing 9-11 mm, those of *M. ascripta* 24-27 mm and 11-13 mm, respectively), the shorter ciliation of the male antenna, the much darker collar and tegulae (these are bright white in *M. ascripta*, while brownish grey in the new species), the less darkened longitudinal band of the forewing and the much narrower but more distinct upper section of the praeterterminal line in the apical area of forewing.

The differences between the male genitalia of the two species are even more expressed. The new species has much shorter uncus, much narrower tegumen and broader vinculum than in *M. ascripta*. The valva of *M. calligrapha* is much broader, with relatively long, finger-like saccular process, while *M. ascripta* lacks saccular process. The harpe of the new species is long, simple, tapering, apically pointed, while that of *M. ascripta* is somewhat shorter, strongly dentate, apically rounded. The aedeagus is similarly elongate, narrow in both species, but somewhat shorter in *M. calligrapha*; the vesica of the new species is armed with a single, short, but conspicuous cornutus, which is absent in *M. ascripta*.

Description: Wingspan 18-23 mm, length of forewing 9-11 mm. Frons dark grey, palpi and vertex greyish white; male antenna bipectinate with relatively short ciliation, female antenna filiform. Collar, tegulae and thorax dark brownish grey, covered with short hair-scales, abdomen pale brownish grey. Forewing relatively narrow, apically rounded, costal margin evenly arcuate, ventral and outer margin straight. Ground colour of forewing greyish white, upper half of median area and subapical longitudinal dark band brownish black. Subbasal line absent, antemedial line double, rather fine, strongly arcuate; medial and postmedial lines poorly visible, sinuous. Praeterterminal line dark grey, rather thick, interrupted, upper third oblique, straight, lower part sinuous, directed towards tornum. Subterminal line interrupted, consisting of short, quadrangular sections, terminal line rather narrow, poorly visible. Cilia double, pale greyish brown, inner part chequered with dark brown. Underside of forewing bright grey, traces of transverse lines poorly visible. Hindwing unicolorous, pale brownish grey, transverse lines absent, discal streak visible; cilia double, brownish grey with inner half somewhat darker. Underside of hindwing as the upperside.

Male genitalia (Figs 20, 21). Uncus very short, narrow, apically pointed; tegumen also relatively short, triangular. Fultura inferior short, rounded; vinculum conspicuously long and strong, longer than tegumen, broadly V-shaped with pointed apex. Valva relatively long, distally bifurcate, dorsal part broad, somewhat dilated terminally, with rounded apex and sclerotised, slightly curved costal margin, ventral (saccular) lobe narrow, heavily sclerotised, its ventral margin almost straight, only slightly wavy, saccular extension narrow, rather long, rounded apically. Harpe large, claw-like, with broad, semilunar base and slender, curved, acute erect process. Aedeagus very long, narrowly tubular, almost straight; vesica with short, pointed cornutus.

Female genitalia (Figs 26, 27). Ovipositor rather short, relatively broad. Apophyses posteriores medium-long, slightly arched. 8th segment rather short, with straight distal and relatively strongly arched, concave proximal margins; antero-lateral part forming a small, acutely triangular lobe. Apophyses anteriores very short. Ostium bursae rather broadly infundibular, strongly sclerotized; ductus bursae medium-long, tubular, relatively narrow,

strongly sclerotized. Cervix bursae short, sack-like, weakly sclerotized; corpus bursae large, ovoid, membranous, with a pair of robust, thorn-like signa of almost equal size.

Distribution. Nepal, North Thailand, Taiwan, Borneo.

Meganola albiscripta sp. nov. (Figs 1, 19, 24)

Holotype ♂, "Nord-Vietnam, Mt. Fan-si-pan, Cha pa, 2400 m, NN 22°15'N, 103° 46'W, 8.-29. 5. 1993, leg. SINJAEV & SIMONOV" (slide No. LGN 604 = W 8286) (coll. MWM)

Diagnosis: The forewing marking is similar in type to that of *M. ascripta* and *M. calligrapha*, but the new species is easily distinguishable by its much paler, almost clear white forewing ground colour, the more diffuse and somewhat narrower longitudinal band of forewing and the different upper part of the praeterterminal line, which is a diffuse, elongate patch in *M. albiscripta*, but a diffuse, oblique stripe in the two similar species. The traces of the transverse lines are much more diffuse in the new species than in *M. ascripta* and *M. calligrapha*; finally, the upper half of the hindwing is much darker in *M. albiscripta* than in the other two species.

The male genitalia of the three species are conspicuously different, those of *M. albiscripta* are, however, closer to *M. ascripta* than to *M. calligrapha*. The male genitalia of *M. albiscripta* differ from those of *M. ascripta* in the following details: the base of uncus and the tegumen are somewhat narrower in *M. albiscripta*, the basal third of valva is much broader, its ventral margin is conspicuously angled posterior at the base of harpe, while the valva of *M. ascripta* is much narrower, with parallel margins. The harpe of *M. albiscripta* is curved, simple, apically pointed, that of *M. ascripta* is more or less straight, strongly dentate, apically rounded. The vinculum of *M. albiscripta* is much shorter; the aedeagus is considerably shorter and somewhat broader than that one of *M. ascripta*.

Description: Wingspan 18 mm, length of forewing 9 mm. Head and palpi greyish brown, male antenna bipectinate with relatively short ciliation. Collar dark greyish brown, tegulae, thorax and abdomen bright white. Forewing relatively narrow, apically rounded, costal margin evenly arcuate, ventral and outer margins straight. Ground colour of forewing bright white, upper half of median area and longitudinal, rather broad band dark brown. Subbasal and antemedial lines absent; medial and postmedial lines rather thin, sinuous, represented by a row of brown scales only in the lower half of forewing. Praeterterminal line dark brown, rather broad, interrupted, upper third oblique, straight, lower part sinuous, directed towards tornus. Subterminal line rather diffuse, pale brown, interrupted, consisting of quadrangular dots, terminal line well-marked, interrupted, rather narrow. Cilia pale brownish white, inner part chequered with dark brown. Underside of forewing bright grey, traces of transverse lines absent. Hindwing brownish grey, inner section greyish white; transverse lines absent, discal streak poorly visible; cilia brownish grey with inner half somewhat darker. Underside of hindwing as the upper side.

Male genitalia (Figs 19, 24). Uncus rather long, robust, distal third tapering, with apex acutely pointed. Tegumen long, narrow, elongate, rather quadrangular; fultura inferior short but broad, apically slightly incised. Vinculum relatively short, thick, V-shaped. Valva simple, basally broadened, distally tapering, apically broadly rounded. Costal margin strongly sclerotised, finely concave, ventral margin almost straight, slightly, irregularly sinuate. Sacculus short but broad, sclerotised, harpe well-developed, curved, claw-like,

Figures 1-18, Habitus and labels

- Fig. 1: *Meganola albiscripta* sp. nov. Holotype ♂, Vietnam (LGN604).
Fig. 2: *Meganola cuneifera* (WALKER, 1862) ♂, Vietnam (LGN602).
Fig. 3: *Meganola cuneifera* (WALKER, 1862) ♂, Thailand (LGN771).
Fig. 4: *Meganola calligrapha* sp. nov. Paratype ♀, Nepal (LGN610).
Fig. 5: *Meganola calligrapha* sp. nov. Holotype ♂, Thailand (LGN757).
Fig. 6: *Meganola calligrapha* sp. nov. Paratype ♂, Taiwan (LGN605).
Fig. 7: *Meganola ascripta* (HAMPSON, 1894) ♂, Thailand (LGN755).
Fig. 8: *Meganola ascripta* (HAMPSON, 1894) Holotype ♂, India, Naga Hills.
Fig. 9: *Meganola ruficostata* (HAMPSON, 1896) ♀, Nepal (LGN603).
Fig. 10: *Meganola ascripta* (HAMPSON, 1894) ♂, Thailand (LGN775).
Fig. 11: *Meganola latiscripta* sp. nov. Holotype ♂, Vietnam (LGN160).
Fig. 12: *Meganola latiscripta* sp. nov. Paratype ♀, China, Hainan (LGN770).
Fig. 13: *Meganola ruficostata* (HAMPSON, 1896) ♂, Thailand (LGN759).
Fig. 14: *Meganola cuneifera* (WALKER, 1862) Holotype ♂, Borneo (slide No. UM.Oxford 669-1973).
Fig. 15: *Meganola ruficostata* (HAMPSON, 1896) Holotype ♀, Bhutan (slide No. BM Arct. 1652).
Fig. 16: *Meganola cuneifera* (WALKER, 1862), labels of the Holotype.
Fig. 17: *Meganola ascripta* (HAMPSON, 1894), labels of the Holotype.
Fig. 18: *Meganola ruficostata* (HAMPSON, 1896), labels of the Holotype.

Figures 19-38, Genitalia

- Fig. 19: *Meganola albiscripta* sp. nov. Holotype ♂, Vietnam, genital capsule (LGN604).
Fig. 20: *Meganola calligrapha* sp. nov. Holotype ♂, Thailand, genital capsule (LGN757).
Fig. 21: *Meganola calligrapha* sp. nov. Holotype ♂, Thailand, aedeagus (LGN757).
Fig. 22: *Meganola cuneifera* (WALKER, 1862) ♂, Thailand, aedeagus (LGN758).
Fig. 23: *Meganola ascripta* (HAMPSON, 1894) ♂, Thailand, genital capsule (LGN775).
Fig. 24: *Meganola albiscripta* sp. nov. Holotype ♂, Vietnam, aedeagus (LGN604).
Fig. 25: *Meganola ascripta* (HAMPSON, 1894) ♂, Thailand, aedeagus (LGN775).
Fig. 26: *Meganola calligrapha* sp. nov. Paratype ♀, Thailand, genitalia (LGN608).
Fig. 27: *Meganola calligrapha* sp. nov. Paratype ♀, Nepal, genitalia (LGN610).
Fig. 28: *Meganola cuneifera* (WALKER, 1862) ♂, Thailand, genital capsule (LGN758).
Fig. 29: *Meganola latiscripta* sp. nov. Holotype ♂, Vietnam, aedeagus (LGN160).
Fig. 30: *Meganola latiscripta* sp. nov. Holotype ♂, Vietnam, genital capsule (LGN160).
Fig. 31: *Meganola latiscripta* sp. nov. Paratype ♀, Vietnam, genitalia (LGN161).
Fig. 32: *Meganola ruficostata* (HAMPSON, 1896) ♀, Nepal, genitalia (LGN603).
Fig. 33: *Meganola latiscripta* sp. nov. Paratype ♀, China, Hainan, genitalia (LGN770).
Fig. 34: *Meganola ruficostata* (HAMPSON, 1896) ♂, Thailand, aedeagus (LGN773).
Fig. 35: *Meganola ruficostata* (HAMPSON, 1896) ♂, Thailand, genital capsule (LGN773).
Fig. 36: *Meganola cuneifera* (WALKER, 1862) Holotype ♂, Borneo, aedeagus (slide No. UM. Oxford 669-1973).
Fig. 37: *Meganola cuneifera* (WALKER, 1862) Holotype ♂, Borneo, genital capsule (slide No. UM. Oxford 669-1973).
Fig. 38: *Meganola ruficostata* (HAMPSON, 1896) Holotype ♀, Bhutan, genitalia (slide No. BM Arct. 1652).



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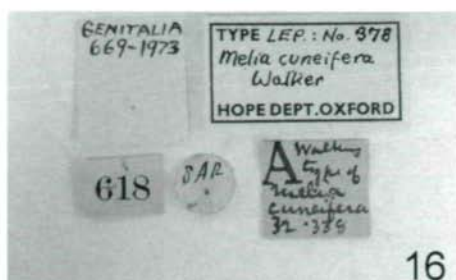
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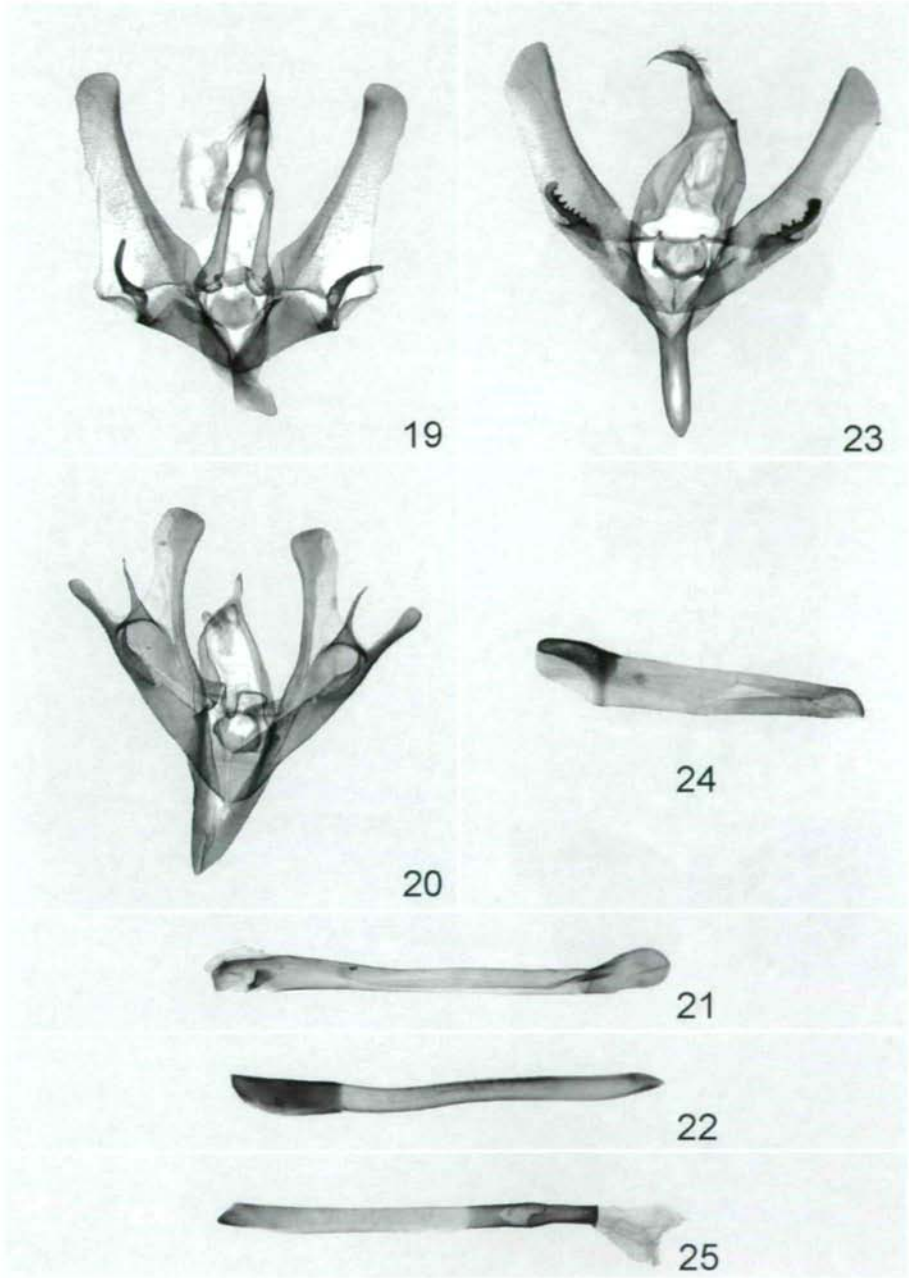
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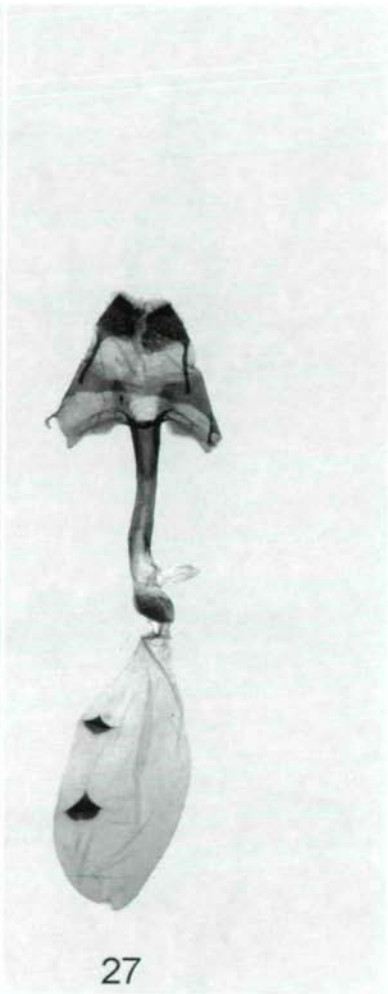
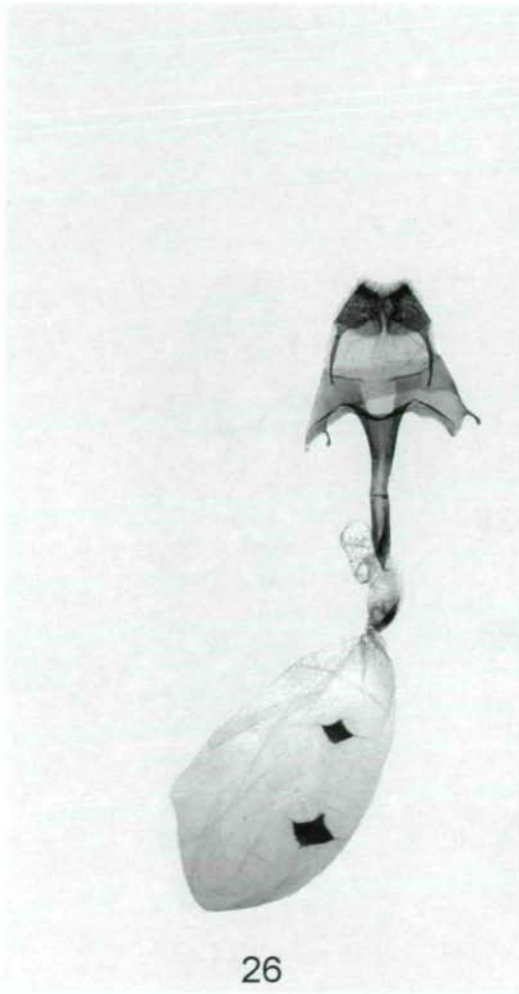


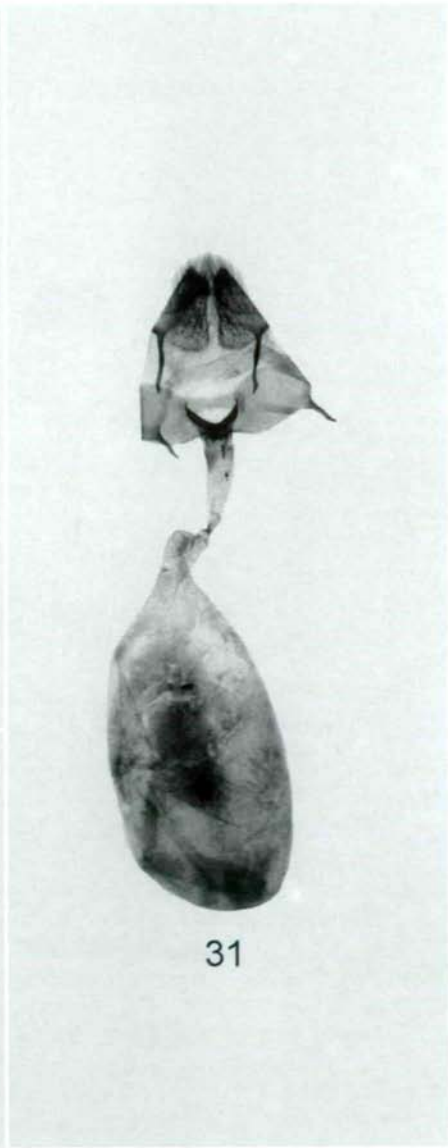
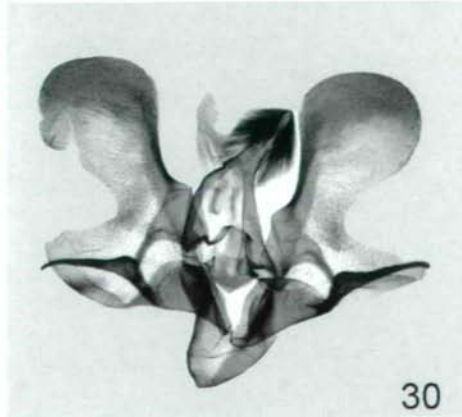
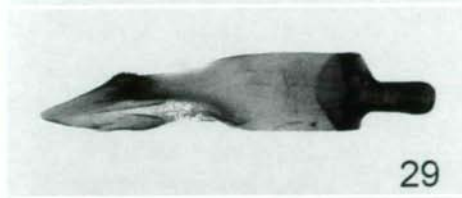
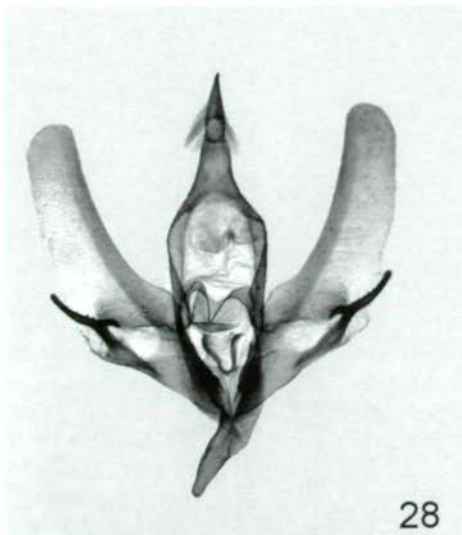
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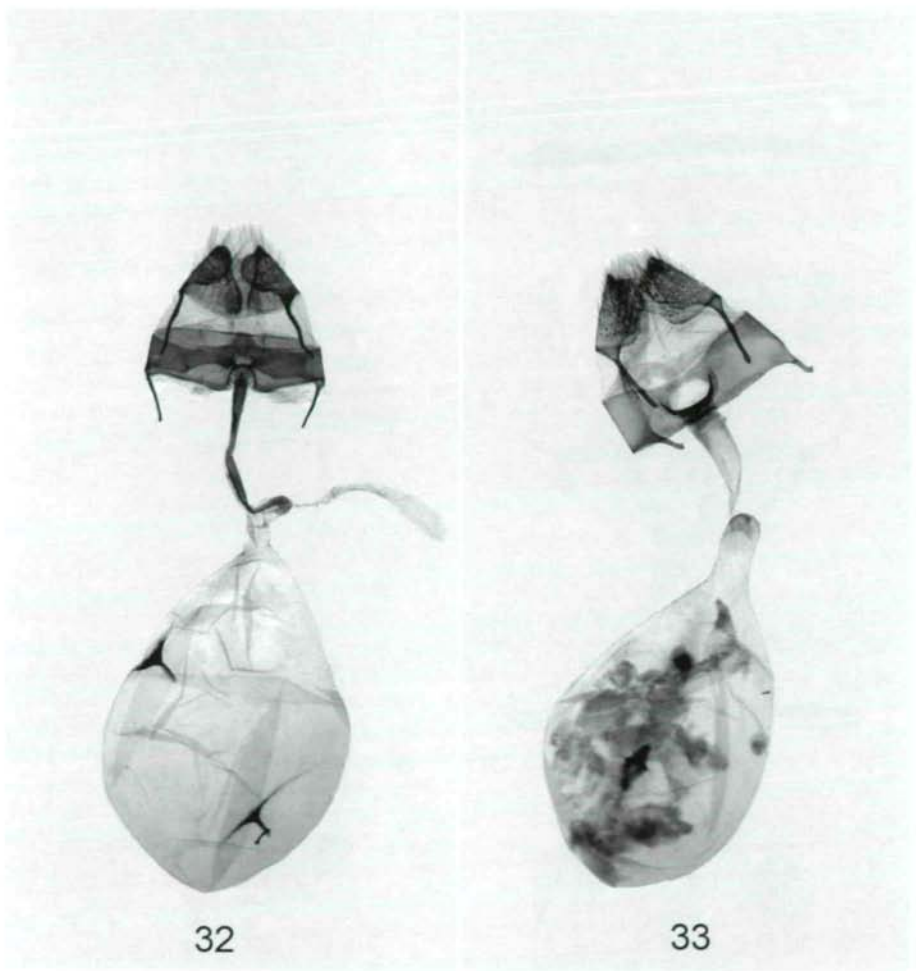


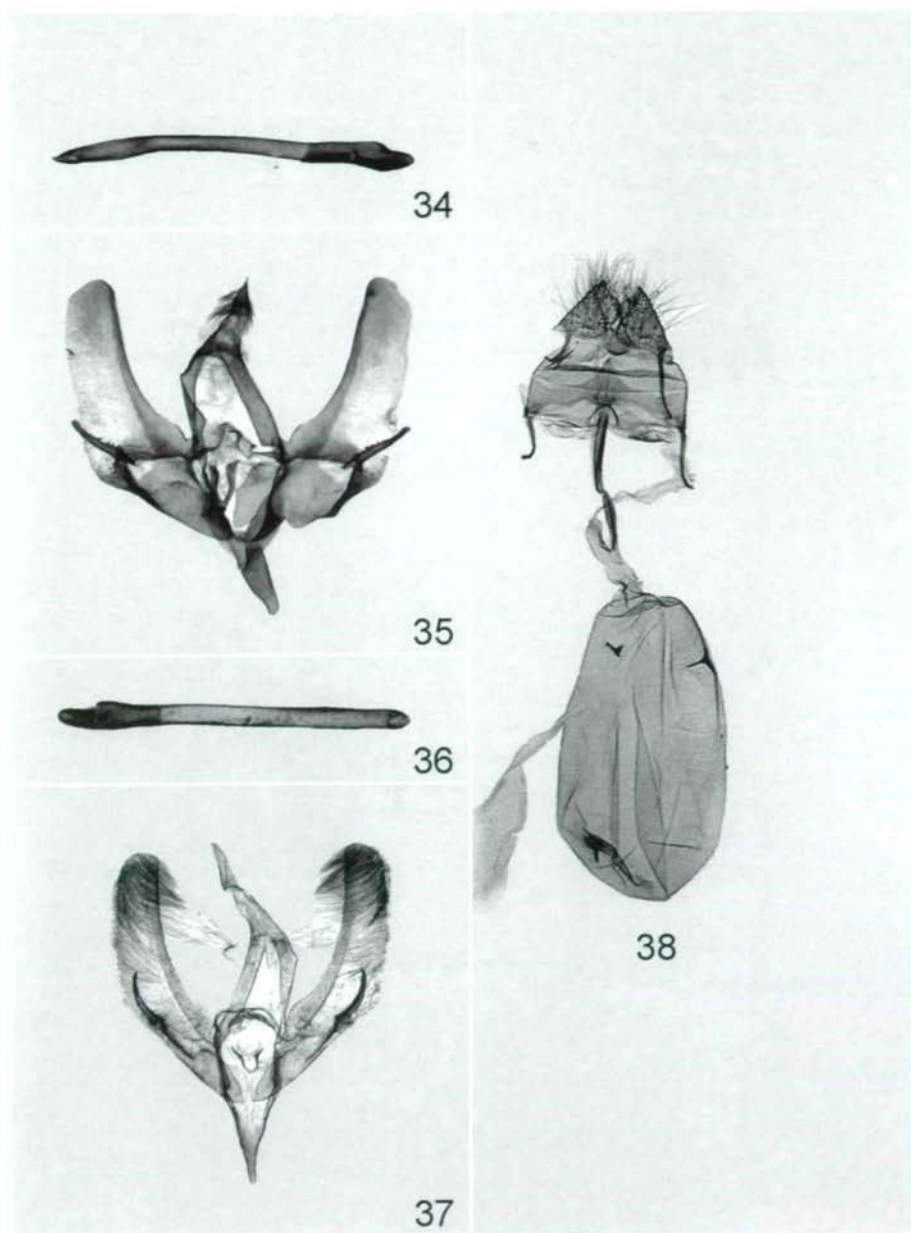
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without dentation. Aedeagus relatively short, broad, distally slightly tapering into a finely pointed apex; vesica without cornuti.

Distribution. *Meganola albiscripta* is known only from its type locality, the Fan-si-pan Mts in northern Vietnam.

Meganola latiscripta sp. nov. (Figs 11, 12, 29, 30, 31, 33)

Holotype ♂, "Vietnam mer., Bach-Ma Nat. Park, 1200 m, 16°10'N, 107°54'E, 26. 7.-6. 8.1996, leg. V. SINIAEV & E. AFONIN" (slide No. LGN 160 = W 8287) (coll. MWM).

Paratypes: Vietnam. 2♂♂ 1♀ (slide No. LGN 161 = W 8288) with the same data as the holotype (coll. MWM). China. Hainan: 1♀, Wuzhi Shan Mts, 18°53'N, 109° 43'E, 1500 m, Febr.-April 2001, local collector leg. (slide No. LGN 770) (coll. HNHM).

Diagnosis: *Meganola latiscripta* resembles externally rather strongly the previously described *M. albiscripta*, the distinctive features are as follows: head and collar of *M. latiscripta* are bright white (those of *M. albiscripta* are greyish brown); the tegulae are dark brown (those are bright white in *M. albiscripta*). The forewing costal margin is darkened by brown only in the very basal part, while that of *M. albiscripta* is covered by greyish brown along its whole length. The dark brown central band of *M. latiscripta* is broader than that of *M. albiscripta*, extending towards the tornal area, while it is running towards the middle of the outer margin in case of *M. albiscripta*. The forewing termen is dark red-brown, while it is pale greyish brown in *M. albiscripta*. Finally, the forewing cilia of *M. latiscripta* is unicolorously pale brown, that is chequered with dark brown in *M. albiscripta*.

The male genitalia of the two species are strikingly different. The most distinctive feature is the valval shape which is much broader in *M. latiscripta*. Its basal third is broadly triangular, medial third deeply incised ventrally, apical third dilated again, forming ample, rounded cucullus. The valva of *M. albiscripta* is considerably narrower, its distal two-thirds is almost evenly tapering towards narrow, finely rounded cucullus. The uncus and the tegumen are similar in the two species, but are somewhat shorter in *M. latiscripta*. The harpe of *M. latiscripta* is significantly longer, narrower, more or less straight, that is shorter, basally thinner, distally more curved in the related species. The aedeagus of *M. latiscripta* is much shorter than those of the other three species, with narrow caecum and broad main tube.

Description: Wingspan 17-18 mm, length of forewing 8-9 mm. Head and palpi bright white; male antenna bipectinate with relatively short ciliation, female antenna filiform. Collar ochreous brown, upper half of tegulae and thorax dark brown, lower half bright white; abdomen bright white. Forewing relatively narrow, apically rounded, costal and outer margin evenly arcuate, ventral margin straight. Ground colour of forewing bright white, basal part of costal margin and outer half ochreous brown, with a rather broad, dark brown longitudinal band. Subbasal line rather fine, dark brown; antemedial line arcuate, rather fine, represented by a row of dark brown scales only at middle of forewing. Medial line sinuous, interrupted, upper quarter blackish, sharply defined, lower part indistinct, shadow-like. Postmedial line sinuous, upper third rather broad, blackish, sharply defined, lower part narrow, dark brown. Praeterminal line interrupted, rather broad, dark brown, upper part represented by a quadrangular patch. Subterminal line poorly visible, interrupted, red-brown. Terminal line represented by a row of fine, red-brown dots. Cilia

ochreous brown with somewhat darker medial stripe. Underside of forewing brownish grey, transverse lines absent. Hindwing brownish grey, outer part somewhat darker; discal stripe poorly visible; cilia brownish grey with somewhat darker medial line. Underside of hindwing as the upperside.

Male genitalia (Figs 29, 30). Uncus relatively short, narrow, apically rounded, covered with dense, long hairs. Tegumen relatively short, broad, trapezoidal. Fultura inferior rather short, distally deeply incised. Vinculum rather short, very broad at base, apically broadly rounded. Valva relatively short, rather broad, distally broadly cleft. Dorsal lobe of valva apically conspicuously broadly rounded, ventral lobe rather triangular. Harpe well-developed, strongly sclerotized, narrow, almost straight, only apical quarter slightly curved, apically pointed. Aedeagus relatively short, proximally rather narrow, medially broader, distally obliquely truncate, apically pointed. Vesica without cornuti.

Female genitalia (Figs 31, 33). Ovipositor relatively short, medium-broad, trapezoidal. Apophyses posteriores medium-long, almost straight, slightly wavy. 8th segment very short, ribbon-like, with straight distal and slightly wavy proximal margins. Apophyses anteriores rather short, straight. Ostium bursae strongly sclerotized, rather broad, conspicuously short, cup-shaped. Ductus bursae medium-long, narrow, poorly sclerotized. Cervix bursae rather short, sack-like, weakly sclerotized. Corpus bursae relatively large, ovoid, with a pair of differently sized, rather small, thorn-like signa.

Distribution. Vietnam (southern), China (Hainan).

2. The *Meganola cuneifera* – *M. ruficostata* problem

Meganola cuneifera (WALKER, 1862) (Figs 2, 3, 14, 16, 22, 28, 36, 37)

Melia cuneifera WALKER, 1862, J. Proc. Linn. Soc. (Zool.) 6: 127. Type-locality: Borneo, Sarawak. Holotype ♂ (UM Oxford).

Type material examined: Holotype male, ring label "SAR[A WAK]", "Type Lep: No. 378 *Melia cuneifera* WALKER HOPE DEP. OXFORD", "Genitalia 669-1973", "618", "A WALKER type of *Melia cuneifera*" (by handwriting).

Additional material examined: Thailand. 1♂, Prov. Chiang Mai, between Chiang Dao and Kariang, 900 m, 98°48'E, 19°25'N, 26.X.2002 (slide No. LGN 758); 1♂, Prov. Nan, 5 km N of Ban Luang, 350 m, between Pi Nai and Pi Tai, 100°27'E, 18°56'N, 4.XI.2002 (slide No. LGN 771), leg. B. HERCZIG & G. RONKAY (coll. HNHM and MWM). India. 1♂, Sikkim, 1898 (coll. BMNH). Vietnam. 2♂♂, Bao Loc, Rung Cat Tien, 1500 m, 107°48'E, 11°32'N, 10-20.XII.1992, leg. SINJAEV & SIMONOV (slide No. LGN 602 = W 8289 and LGN 164 = W 8290) (coll. MWM). Borneo. 2♂♂, Sarawak, Gunong Mulu Nat. Park, Mulu, 150 m; 1♂, Sabah, Danum Valley Field Centre (coll. BMNH).

Taxonomic comments. *Melia cuneifera* was described by WALKER in 1862 on the basis of a sole male specimen collected in Borneo. Later, HAMPSON (1896) found a similar but very large female specimen from Bhutan and described it as *Selca ruficostata*. Four years later, in the catalogue of HAMPSON (1900) *ruficostata* is mentioned as a mere synonym of *cuneifera*, without argumentation of the synonymization. The main reason of this decision could have been the finding of a male specimen in Sikkim collected in 1898, which male moth is matching very well with the Bornean holotype of *cuneifera*. Based on these three known specimens, HAMPSON's opinion appeared as well established, considering the

otherwise remarkable differences in the size and the forewing pattern as a simple sexual dimorphism. But his opinion was only partly correct. The male specimens from Sikkim proved to belong to *Meganola cuneifera* but the female did not. In 2002 we had the great luck to collect 18 specimens of this species complex, representing two clearly separable species: two typical ♂♂ of *M. cuneifera* and 14♂♂ 2♀♀ from the other species of which the size, wing shape and wing pattern fit very well with those of the female holotype of *M. ruficostata*. It became clear that the males and the females of this second species differ only by their size but the elements of the wing pattern are the same and surprisingly invariable. This conservative wing shape and pattern is also typical of *M. cuneifera*, in spite of its really large range of distribution (from the southern Himalayas to Borneo), the few known specimens show no remarkable differences in their external and genital features.

The males of the two species are clearly separable by both their external and genital features (see below, in the diagnosis of *M. cuneifera*). Unfortunately the female sex is known only from one of the species, therefore, the comparison of the female genitalia still cannot be given. That is a very improbable possibility that the externally very homogeneous series of males and females, found together in Thailand, belong to two different species, thus these males are considered as the true males of *M. ruficostata* and this species complex is treated as a closely related species-pair. In summary, the specific status of *Meganola ruficostata* is reinstated here as bona species.

Diagnosis. *Meganola cuneifera* and its twin species *M. ruficostata* are easily distinguishable by a series of external and genital features. *Meganola cuneifera* is somewhat smaller in size (wingspan 17-18 mm, length of forewing 8-9 mm, those of *M. ruficostata* are 18-23 mm and 9-12 mm, respectively), the longitudinal streak in the middle of the forewing is conspicuously longer, broader than that of its sister species, and the forewing costal and median areas are more darkened. The male genitalia of *M. cuneifera* have, comparing with those of *M. ruficostata*, considerably narrower valva, more arcuate, narrower, less dentate harpe and conspicuously shorter and narrower aedeagus.

Distribution. Nepal, Thailand, North Vietnam, Borneo.

***Meganola ruficostata* (HAMPSON, 1896) stat. rev. as bona species**

(Figs 9, 13, 15, 18, 32, 34, 35, 38)

Selca ruficostata HAMPSON, 1896, Fauna of British India, Moths 4: 507. Type-locality: Bhutan. Holotype: female (BMNH, London).

Material examined: Holotype female, red ring type label, "Bhutan, 95-87, 26.V.95", "*Selca ruficostata* type female" (by handwriting), slide No.: BM. Arctiidae 1652.

Additional material examined: Nepal. 1♀, Kaski distr., Pokhara vic., Begnas Lake, 84° 05'E, 29°09'N, 11.X.1994 (slide No. LGN 603 = W 8291), leg. CSORBA & RONKAY. Thailand. 14♂♂ (slide Nos LGN 759, LGN 773, LGN 774), 2♀♀ (slide No. LGN 772), Prov. Chiang Mai, between Chiang Dao and Kariang, 900 m, 98°48'E, 19°25'N, 26.X.2002, leg. B. HERCZIG & G. RONKAY (coll. HNHM and MWM).

Distribution. SE Himalayas: Nepal, Bhutan, North Thailand.

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Literaturbesprechung

MOLLES Jr., M.C. 2004: Ecology. Concepts and Applications. - McGraw-Hill, Boston. 3. Aufl., 622 S.

Dieses Lehrbuch weicht nicht direkt von den klassischen Themen der Ökologie ab, unterscheidet sich aber von vielen Lehrbüchern (v.a. im deutschsprachigen Raum) anhand des Aufbaues. Auf nahezu 600 Textseiten werden alle ökologischen Aspekte anhand von 23, in sich recht kompakten Kapiteln vorgestellt.

Der "rote Faden" besteht in einem Kontinuum, beginnend mit einer allgemeinen Einführung, gefolgt von der Ökologie der Individuen, hin zur Populationsökologie, den ökologischen Interaktionen und der Betrachtung von Ökosystemen. Die Lehreinheiten eines jeden Kapitels bestehen in einer Einführung, der Vorstellung von Konzepten, die Diskussion dieser Konzepte und schließlich ihre Anwendung. Eine Unzahl farbiger Grafiken und Fotos veranschaulichen die Beispiele (die klassischen Musterbeispiele der Ökologie, aber auch zahlreiche "neue" Aspekte aus allen Kontinenten). In Ergänzung zum Textbuch gibt es vom Verlag eine CD-ROM, ein 100-Folien-Set und die Möglichkeit zur Benutzung des "Online Learning Center". Am Ende jedes Kapitels dienen 10 Fragen der Wissensüberprüfung, Literaturzitate regen zum weiterführenden Studium an.

Für Studierende und Lehrende der Ökologie eine spannende, bunte, aktuelle und empfehlenswerte zusätzliche Alternative zu den "gängigen" Lehrbüchern.

R. GERSTMEIER

CHINERY, M. 2004: Pareys Buch der Insekten. - Franckh-Kosmos Verlag, Stuttgart. 327 S.

Nun ist Pareys Insektenbuch offensichtlich bei Kosmos gelandet, leicht aktualisiert, von Konzeption und Aufbau her aber gleich geblieben. Über 2000 Insektenarten Europas werden auf fast 300 Seiten per Farbzeichnungen dargestellt, nicht nur Imagines, sondern auch Larven, Raupen, Gallen, Minen und Fraßbilder. Von den südlichen Gottesanbeterinnen bis zu den skandinavischen Hummeln, kein anderes Insektenbuch stellt so viele Arten Europas vor; von den Winzlingen bis zu den südlichen Riesen (Sägeschrecke, südfranzösische Sattelschrecke). Aber auch andere Arthropoden, wie Hundert-, Doppelfüßer, Asseln und Spinnentiere, die den Lebensraum mit den Insekten teilen, werden vorgestellt. Ausbaufähig wären lediglich die Kapitel über land- und wasserbewohnende Larven. Pareys Buch der Insekten ist seit vielen Jahren das einzigartige Standardwerk im Taschenformat, welches in den meisten Fällen ein rasches Ansprechen (zumindest auf Familien-, evt. sogar auf Gattungsniveau) der Kerbtiere erlaubt und noch reichlich Zusatzinformationen über die Lebensweise gibt.

Dieser Insektenführer darf auf keinem Naturspaziergang fehlen. R. GERSTMEIER

KONONENKO, Vladimir S. & PINRATANA, Amnuay 2005: Moths of Thailand, Band 3. Noctuidae. Teil 1. Mit 45 ausgezeichneten Farbtafeln. Brothers of Saint Gabriel in Thailand, 565 Samsen Road, Bangkok 10300, Thailand. ISBN 947-92717-5-0.

Der vorliegende Band ist ein illustrierter Katalog der Unterfamilien Herminiinae, Rivulinae, Hypeninae, Catocalinae, Aganainae, Stictopterinae, Plusiinae, Pantheinae und Agaristinae von Thailand. Wie schon allein aus der langen Liste der abgehandelten Unterfamilien hervorgeht, wird im vorliegenden Band ein umfangreiches Stück Biodiversität

vorgestellt. Zahlreiche Arten werden in hervorragender Bildqualität teilweise zum ersten Mal farbig abgebildet. Viele Arten werden auch neu für Thailand gemeldet. Für denjenigen, der an der Taxonomie von Eulenfaltern der Orientalischen Region interessiert ist, ein absolut unverzichtbares Buch! Als besonders vorbildlich ist hervorzuheben, dass auf die Benennung zahlreicher wahrscheinlich neuer Arten, die auf "Addenda"-Tafeln abgebildet sind, verzichtet wurde. Dies zeigt, dass unsere Artenkenntnis in Südostasien noch lange nicht umfassend ist. Besonders bei den kleineren Arten sind noch einige eingehende Revisionen nötig, die das vorliegende Buch vielleicht anregt. Unglücklicherweise ist bei der technischen Endbearbeitung des Bandes ein von den Autoren nicht verschuldeter Fehler aufgetreten: Auf den Seiten 17 und 18 wurde der Text von den Seiten 25 und 26 (also die Arten 83 bis 93) ein zweites Mal abgedruckt. Die richtigen Seiten 17 und 18 (mit den Arten 42 bis 52) sind von Dr. Kononenko auf Anfrage erhältlich (e-mail Anschrift im Buch angegeben) und können leicht über die beiden falschen Seiten 17 und 18 geklebt werden.

Der Ruf der beiden Autoren garantiert für die Zuverlässigkeit der Arbeit und die weitgehend vollständige Erfassung der Fauna. Der Leser möge sich nicht von den zahlreichen kleinen, aber nicht sinnstörenden Druckfehlern verunsichern lassen: Eine wirklich gründliche Arbeit von Rang, der hoffentlich bald weitere dringend benötigte Bearbeitungen folgen!

W. SPEIDEL

SZIJJ, J. 2004: Die Springschrecken Europas. - Die Neue Brehm Bücherei. Westarp Wissenschaften, Hohenwarleben. 176 S.

Dieses kompakte Büchlein hat sich zum Ziel gesetzt, dem Leser einen Einblick in die Saltatorienfauna Europas zu geben. Es ist kein Bestimmungsbuch, welches die Determination bis zur Art erlaubt, wobei dies trotzdem anhand der fantastischen Farbzeichnungen vielfach möglich sein wird, sondern einen Überblick über die Gattungen gibt. Von den 201 in Europa vorkommenden Gattungen wurden 170 ausgewählt und vorgestellt. Die Kombination Abbildung, Bestimmungsschlüssel und kurze Gattungsbeschreibung sollte ein sicheres Ansprechen der Gattungen gewährleisten.

R. GERSTMIEIER

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