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New taxa in the *Meganola scripta* (MOORE, 1888) species group and in the genus *Dialithoptera* HAMPSON, 1900 Investigations on Asian Nolidae IV *

(Lepidoptera, Nolidae)

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Abstract

The pesent paper contains a taxonomic analysis of the *Meganola scripta* (s. l.) group and the genus *Dialithoptera*. A new subspecies of *Meganola scripta* (MOORE, 1888) from China (Shaanxi) (*M. s. csoevarii* **ssp. n.**), a new twin species of *M. scripta* from North Thailand (*M. implicata* **sp. n.**), and the second *Dialithoptera* HAMPSON, 1900 species, *D. margarita* **sp. n.**, from North Thailand are described. With 24 figures.
Key words: Nolidae, *Meganola*, *Dialithoptera*, new species, new subspecies.

Zusammenfassung

Der vorliegende Artikel enthält eine taxonomische Analyse der *Meganola scripta* (s. l.) Gruppe und der Gattung *Dialithoptera*. Eine neue Subspezies von *Meganola scripta* (MOORE, 1888) aus China (Shaanxi) (*M. s. csoevarii* **ssp. n.**), eine neue Schwesterart von *M. scripta* aus Nord-Thailand (*M. implicata* **sp. n.**) und die zweite *Dialithoptera* HAMPSON, 1900-Art, *D. margarita* **sp. n.**, aus Nord-Thailand werden beschrieben. Mit 24 Abbildungen.

* This is the fourth paper dealing with taxonomical problems of the family Nolidae (Lepidoptera). (3rd paper: Entomofauna 27 / 2006 (21): 265-276.

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Abbreviations

BMNH = The Natural History Museum, London;
HNHM = Hungarian Natural History Museum, Budapest;
MWM = Museum WITT, Munich;
LGN = Nolidae genital slide of László M. GYULA;
W = slide of the WITT Museum, Munich.

The „*Meganola*" *scripta* group

The „*scripta*-group" according to our present knowledge, involves three, externally rather characteristic and similar species, *M. scripta* (MOORE, 1888), *M. implicata* **sp. n.** and *M. scriptoides* HOLLOWAY, 2003, respectively. It is important to note that the „*scripta*-group" is supposedly not a natural phyletic unit as it could be supposed from the external appearance of the three species (see HOLLOWAY 2003): The male genitalia of the first two species confirm their close relationship, but those of the third species are conspicuously different in almost all features. Therefore, a closer relationship between *M. scriptoides* and the other two species is hardly supported (compare the genitalia figs 13-20).

Meganola scripta (MOORE, 1888) (Figs 1, 2)

Roeselia scripta MOORE, 1888, Proc. zool. Soc. Lond. 1888: 393. Type-locality: India [Himachal Pradesh], Dharmsala. Holotype: male, in BMNH.

Type material examined. Holotype: Red ring type label, „Kangra, J. H. HOCKING, 83-26" „*Roeselia scripta* male, type, MOORE" (in handwriting). Slide No. Arctiidae 1844 (coll. BMNH, London).

Additional material examined. Pakistan: 1 male, Kashmir, Himalaya Mts, 30 km N Murree, near Nathia Ghali, Ayubia village, 2600 m, 25-27. VI. 1998 (slide No. LGN 86 = W8310); 1 female, same site, 23. V. 1998 (slide No. LGN 87 = W8311); 1 female, Kaghan valley, Tathabaya, 2200 m, 73°26′E, 34°36′N, 9-10. IX. 1997, leg. Gy. FÁBIÁN, B. HERCZIG, Gy. M. LÁSZLÓ and G. RONKAY. Nepal: 1 male, Ganesh Himal, 2720 m, above Nesim, 85°16′E, 28°08,5′N, 21. IX. 1995 (slide No. LGN 7 = W8313); 1 male, Surkhe Danda, 4 km NE Suketar, Lali Kharka, 9. V. 1997, 2350 m (slide No. LGN 10 = W8314); 1 female, Mechi, Taplejung area, Kare Banjang, 2250 m, 87°56′E, 27°25′N, 02. XI. 1996 (slide No. LGN 8 = W8312), leg. B. HERCZIG, M. HREBLAY, Gy. M. LÁSZLÓ and L. SZÉCSÉNYI. Thailand: 1 male, Chiang Mai Prov., 4 km S of Kop Dong, 99°03′E, 19°52′N, 1800 m, 11. XI. 2002, leg. B. HERCZIG & G. RONKAY" (slide No. LGN 780); 1 male, same site, but collected at 06. XI. 2002; 1 male, Prov. Chiang Mai, 1600 m, between Fang and Nor Lae, 99°06′E, 20°02′N, 28. X. 2002, leg. B. HERCZIG & G. RONKAY; 1 male, Prov. Nan, 30 km E of Pua, 1700 m, 20. II. 1998, leg. M. HREBLAY & Cs. SZABÓKY (slide No. LGN 791 = W8322). Vietnam: 1 male, 1600 m, Mt. Fan-Si-Pan, Sa Pa, 22°17′N, 103°44′E, 20-30. IV. 1995, leg. V. SINJAEV and local collector (slide

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No. LGN 9 = W8315). The specimens are preserved in coll. HNHM, Budapest and MWM, Munich.

Male genitalia (fig. 13).

Female genitalia (fig. 14).

Bionomics and distribution: The nominate subspecies of *M. scripta* occurs throughout the main Himalayan chain from the Kaghan valley in Pakistan through the Nepal Himalaya and the Northern Thai Mts, towards the Fan-Si-Pan Mts, northern Vietnam. All known populations of this species appear to be polyvoltine inhabiting deciduous monsoonic forests of medium-high mountain regions between 1600 and 2800 m elevation.

Meganola scripta csoevarii **ssp. n.** (Figs 3, 4)

Holotype: male, „China / Shaanxi, Daba Shan, 1800 m, 15 km S Shou-Man vil. 32°08′N, 108°37′E, 25. V.-14. 06. 2000, leg. SINIAEV & PLUTENKO“ (slide No. LGN 808 = W8317) (coll. MWM, Munich).

Paratypes: 6 males, 2 females, with the same data as the holotype (slide No. LGN 809 = W8318); 1 male, Tapaishan Mts, 33°53′N, 107°49′E, 1500 m, IV. 2000, leg. SINIAEV; 1 male, Tapaishan Mts, 1700 m, 19. V. 1936 (slide No. LGN 262 = W8319); 1 female, same site, but collected at 20. VI. 1935, leg. H. HÖNE (slide No. LGN 263 = W8320) (coll. MWM, Munich).

Diagnosis: The new Central Chinese subspecies of *M. scripta* differs from the nominate Himalayan subspecies by its somewhat larger size (wingspan and length of forewing of *M. s. scripta* are 21,5-25,5 and 10,5-12,5 mm, those of *M. s. csoevarii* are 22-26 and 11-13 mm, respectively), slightly paler ground colour of wings and by the conspicuously larger, more rounded and somewhat darker patches in the forewing terminal area.

Male genitalia (fig. 15): No remarkable differences were found between the present and the nominate subspecies (see fig. 13).

Female genitalia (fig. 16): Also no remarkable differences to the nominate subspecies (see fig. 14) traced.

Distribution: *M. s. csoevarii* occurs in medium high mountains of Shaanxi. The specimens of the type series were collected in deciduous forests of Tapaishan and Daba-shan mountains in an elevation of 1700-1800 m a.s.l. The specimens were collected between April and June.

Meganola implicata **sp. n.** (Figs 5, 6)

Holotype: male, „North Thailand, Prov. Mae Hong Son, 1250 m, between Pa Pae and Khun Sa, 98°39′E, 19°08′N, 31. 10. 2002, leg. B. HERCZIG et G. RONKAY“ (slide No. LGN 777) (coll. HNHM, Budapest).

Paratypes: 2 males, with the same data as the holotype; 1 female, Prov. Nan, 30 km E of Pua, 1700 m, 12-13. I. 1999, leg. A. SZABÓ & Z. CZERE (slide No. LGN 814 = W8316); 1 female, same site, 21. I. 2004, leg. A. SZABÓ & P. HENTSCHEL; 1 female, Prov. Chiang Mai, between Fang and Nor Lae, 1600 m, 99°06′E, 20°02′N, 12. XI. 2002,

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leg. B. HERCZIG & G. RONKAY; 1 male, Prov. Chiang Mai, Doi Inthanon, 2300 m, 16. I. 2004; 1 male, 1 female, Prov. Chiang Mai, 23 km NW Sop Kha, 1650 m, 14. I. 2004, leg. A. SZABÓ & P. HENTSCHEL (coll. HNHM, Budapest and MWM, Munich).

Diagnosis: The new species is closely related to *M. scripta* but is easily distinguishable by the following features: *M. implicata* is significantly smaller in size (wingspan and length of forewing are 17-22 and 8,5-11 mm, while the size-data of *M. s. scripta* are 21,5-25,5 and 10,5-12,5 mm, respectively), having conspicuously narrower, more elongate forewings. The forewing ground colour of the new species is more intensively brown, the crosslines are narrover, much less sharply defined, the patches of the ventral margin of forewing (which are typical for *M. scripta*) are absent, the patches of the terminal area are much smaller, paler, dash-like, or represented only by rather small dots, while they are more or less rounded in *M. scripta*. The antemedial line of the new species is almost straight, only very slightly arcuate, that of *M. scripta* is strongly arched. Surprisingly, inspite of the rather large external differences, the male and female genitalia are almost identical with its sympatric sister species, *M. scripta*. There are slight differences in the shape of fultura inferior, but the other parts of the genitalia of both sexes have too large individual variation to recognize possibly slight specific differences.

Description: Wingspan 17-22 mm, length of forewing 8,5-11 mm. Head relatively large, palpi, frons and vertex covered with pale greyish brown scales; male antenna bipectinate, female antenna filiform. Collar and thorax whitish grey, tegulae greyish brown, covered with short hair-scales; abdomen shiny whitish grey with somewhat darker stripes along bases of segments. Forewing relatively narrow, apically rounded, costal and outer margin evenly arcuate, ventral margin straight. Ground colour of forewing pale brownish grey, upper half of basal area dark brown. Subbasal line absent, antemedial line fine, almost straight, rather sharply defined with black scales; medial line rather fine, strongly sinuous, represented only in the lower half; postmedial line double, strongly arcuate, present only in the upper half of wing. Praeterminal line shadow-like, poorly visible, represented only by a row of brown patches; subterminal line interrupted, poorly visible, consisting of a row of dark grey spots in tornal area and a quadrangular patch at termen; terminal line rather narrow, with dark grey spots at veins. Cilia pale greyish brown. Underside of forewing bright brownish grey, traces of transverse lines poorly visible. Hindwing unicolorous, bright brownish grey, transverse lines and discal streak absent; cilia double, pale brownish grey. Underside of hindwing bright brownish grey, upper third dark grey.

Male genitalia (Fig. 17): Uncus simple, medium long, apical third strongly tapering, with apex pointed. Tegumen relatively short, trapezoidal. Fultura inferior rather short, cordiform; vinculum relatively large, V-shaped. Valva rather large, costal margin slightly concave; ventral edge of valva deeply concave; cucullus broadly rounded. Sacculus rather short, without processes; harpe well developed, with a single, medium-long, fine, finger-like, apically rounded process. Aedeagus medium-long, slightly arcuate, apically cuneate; vesica armed with a large, long cornutus, its length about two-thirds of full length of vesica.

Female genitalia (Fig. 18): Ovipositor rather short, relatively broad. Apophyses posteriores relatively short, straight. Eighth tergite rather short, ribbon like; apophyses anteriores very short. Ostium bursae simple, cup-shaped; ductus bursae relatively long, distal two-thirds strongly sclerotized, coiled, proximal third membranous, with a well-

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developed, cartilagineous lateral appendage. Cervix bursae rather narrow; corpus bursae ovoid, with two inequal, strongly sclerotized, pyramidal signa.

Bionomics and distribution: *M. implicata* is known only from medium high zones of the mountains of North Thailand. The specimens of the type series were collected at light, in clearings of deciduous forests between 1250 and 1700 m a.s.l. in late autumn and winter. No additional data of its bionomics are known.

Meganola scriptoides HOLLOWAY, 2003 (Figs 7, 8)

„Meganola" scriptoides HOLLOWAY, 2003, The Moths of Borneo 18: 27. Type locality: Borneo, Sarawak. Holotype: male, in BMNH.

Type material examined: Holotype: male, „Sarawak: Gunong Mulu Nat. Park, R.G.S. Exped. 1977-8 (J.D. HOLLOWAY et al.), site 15, February, Mulu, Camp 2.5, 1000 m, 413436, lower montane forest"; slide No BM Noctuidae 17033 (coll. BMNH, London).

Additional material examined: 1 male, Thailand, Prov. Chiang Mai, 6 km SE of Pang Faen, 1100 m, 29. I. 1999, leg. A. SZABÓ & Z. CZERE (slide No. LGN 790 = W8321); 1 male, 1 female, Prov. Nan, Doi Phuka NP, between Pua and Bo Luang, 1350 m, 101°05′E, 19°12′N, 3. XI. 2002, leg. B. HERCZIG & G. RONKAY (slide Nos LGN 778, LGN 779) (coll. HNHM, Budapest and MWM, Munich)

Male genitalia see fig. 19.

Female genitalia see fig. 20.

Distribution: The species described from Borneo has recently been recorded from the mountains of North Thailand. Its range covers probably also certain other parts of Indochina and the Malay Archipelago.

2. The genus *Dialithoptera* HAMPSON, 1900

Dialithoptera HAMPSON, 1900, Cat. Lepid. Phalaenae Br. Mus. 2: 50. Type-species: *Pisara gemmata* HAMPSON, 1896, Fauna of British India, Moths 4: 506, by original designation. Type-locality: [India] Sikkim. Holotype: male, in BMNH.

Dialithoptera is a rather characteristic genus of the family Nolidae. The species of the genus are easily recognizable by their rather short and rounded forewing, the greyish white ground colour suffused with dark brown in the costal and terminal areas and the scarce but conspicuous sprinkled pattern of splendid silvery scales on the forewing. The bipectinate antenna of both sexes is an unusual and typical feature within the entire Nolidae. The elongate, more or less tongue-like valva with a fine, acute, fused process of ampulla and harpe in the male genitalia, and the double sun-like signa in the female genitalia are also unique features within Nolidae.

The genus has long been treated as monobasic but the recent lepidopterological expeditions led to SE Asia have discovered a sister species of *D. gemmata*; the two species occur sympatrically in North Thailand and Vietnam.

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Dialithoptera gemmata (HAMPSON, 1896) (Figs 9, 10)

Pisara gemmata HAMPSON, 1896, Fauna of British India, Moths 4: 506, by original designation. Type-locality: [India] Sikkim. Holotype: male, in BMNH.

Type material examined. Holotype: [red ring type label]: male, „Sikkim, 2600, May 1895, J.G. PILCHER", „Sikkim 95-146 PILCHER", „*Pisara gemmata* type male HMPSN." (in handwriting); „Arctiidae genitalia slide No. 1647" (coll. BMNH, London).

Additional material examined. Nepal. 1 female, Tanahoun distr., Baisakhe Ghat, 10 km W Dulegounda, 630 m, 10. X. 1994, leg. CSORBA & RONKAY (slide No. LGN 361). Myanmar. 1 male, 21 km E Putao, Nan Sa Bon village, 550 m, 1-5. V. 1998, leg. MURZIN & SINJAEV (slide No. LGN 162 = W8324). Thailand. 1 male, Prov. Chiang Mai, 450 m, Mok Fa Garden Resort, 98°48′E, 19°06′N, 1. XI. 2002; 1 male, 500 m, Mae Suai, Charin Garden Resort, 99°35′E, 19°47′N, 2. XI. 2002; 5 males, between Chiang Dao and Kariang, 900 m, 98°48′E, 19°25′N, 26. X. 2002, leg. B. HERCZIG & G. RONKAY. Indonesia. 1 male, Sumatra, Prapat, 2. IX. 1983 (slide No. LGN 446); 1 female, 28. X. 1983 (slide No. LGN 447), leg. Dr. DIEHL (coll. HNHM, Budapest and MWM, Munich).

Male genitalia are shown in fig. 21.

Female genitalia see fig. 22.

Bionomics and distribution: *D. gemmata* is a widely distributed species, its geographic range covers the lower parts of N.E. Himalaya in Nepal, Indian Sikkim and Burma, the North Thailandese Mts, the Fan-Si-Pan Mts in Vietnam; in addition it is recorded from Sumatra and Borneo. A typical member of the subtropical-tropical lowland and hilly deciduous forests. The known data on the biology, larval morphology and foodplant are published by HOLLOWAY (2003).

Dialithoptera margarita sp. n. (Figs 11, 12)

Holotype: male, „North Thailand, Prov. Mae Hong Son, 1250 m, between Pa Pae and Khun Sa, 98°39′E, 19°08′N, 31.10.2002, leg. B. HERCZIG et G. RONKAY" (slide No. LGN 776) (coll. HNHM, Budapest).

Paratypes: Thailand. 1 female, with the same data as the holotype (slide No. LGN 906). Vietnam. 1 female, Mt. Fan-si-pan, Sa Pa, 2400 m, 22°15′N, 103°46′E, 8-29. V. 1993, leg. SINJAEV and SIMONOV (slide No. LGN 362 = W8323) (coll. HNHM, Budapest and MWM, Munich).

Diagnosis: The new species is closely related to *D. gemmata*, but is easily distinguishable by its somewhat shorter and broader forewing, its conspicuously paler ground colour (greyish white in *D. margarita*, orange-brown in *D. gemmata*) and paler medio-costal and tornal areas of forewing (greyish brown in *D. margarita*, dark red-brown in *D. gemmata*). The postmedial line of the new species is strongly arched, while that of *D. gemmata* is almost straight and the blueish-diamond dots on the transverse lines are somewhat smaller and less brilliant in *D. margarita* than in its sister species. The genitalia of the two species are very similar. The fused ampullar process of *D. margarita* is shorter and basally broader, with triangular dorsal extension at base; uncus more thickened at medial third; distal part of valva narrower; fultura broader and shorter. *D. gemmata* has longer, narrower common ampullar process, without basal extension;

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uncus evenly tapering towards acute tip; valva distally somewhat dilated, broader at base of cucullus; fultura narrower and longer. Ostium bursae of *D. margarita* is somewhat less asymmetrical than in *D. gemmata*, with parallel lateral margins at medial section; signa have stronger and more densely arranged „ray-like" radial processes. The ostium of *D. gemmata* is more asymmetrical at caudal end, more funnel-like with more oblique lateral margins; signa have weaker and smaller processes than in the new species.

Description: Wingspan: 15-16 mm, length of forewing: 7-8 mm. Head relatively large, palpi brownish-white, frons and vertex covered with snow-white hair scales; antenna short, bipectinate in both sexes. Thorax pale brownish grey, collar and tegulae snow-white; abdomen brownish grey. Forewing rather short, relatively broad, apically rounded, costal and outer margins evenly arcuate, ventral margin straight. Ground colour of forewing greyish white, basal half of costal area and tornal area pale brownish grey. Subbasal and antemedial lines absent, medial line rather broad, almost straight, interrupted, consisting of groups of dark grey scales with fine, brilliant silvery sprinkling. Postmedial line rather fine, poorly visible, strongly arcuate, dotted scarcely with fine, bright-diamond scales; praeterminal line shadow-like, poorly visible, represented only at lower part of forewing as a row of dark brown scales. Subterminal line rather broad, sinuous, interrupted, upper section poorly visible, greyish brown, lower half S-shaped, represented by a scarce row of fine, bright-diamond scales. Terminal line conspicuously broad, marked with a row of rather fine silvery shining scales. Cilia white at base, outer half chequered with dark brown. Underside of forewing bright graphite-grey, traces of transverse lines poorly visible. Hindwing unicolorous, bright pale grey, transverse lines and discal streak absent; cilia shining whitish grey, with paler basal line. Underside of hindwing bright graphite grey.

Male genitalia (Fig. 23): Uncus relatively long, robust, ventrally curved, apically pointed; medially somewhat thickened. Tegumen rather narrow, elongate-triangular; fultura inferior broad and short, calyciform; vinculum short, V-shaped. Valva conspicuously narrow, elongate, with rather parallel margins; cucullus broadly rounded. Sacculus narrow, without processes. Harpe with long and broad, laminate, sclerotized base and fine erect process, fused with stronger extension of ampulla into a common, cuneate process. Basal plate of ampulla also strong, with a small and conspicuous dorsal triangular extension. Aedeagus rather short, straight; vesica without cornuti.

Female genitalia (Fig. 24): Ovipositor rather short, relatively broad. Apophyses posteriores relatively long, straight. Eighth tergite short, with parallel distal and proximal margins; apophyses anteriores very short, thorn-like. Ostium bursae well-developed, elongate-quadrangular, proximal half somewhat broadened; ductus bursae very long, rather narrow, membranous. Cervix bursae very narrow; corpus bursae more or less rounded, with a pair of rather large, circular, sun-shaped signa, armed with dense, radial processes; appendix bursae absent.

Distribution: The new species occurs, according to our present knowledge, in medium-high regions of the mountains in N. Thailand and N. Vietnam. The specimens of the type series were collected at light, in the clearings of deciduous forests.

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Legend to figures

Plate 1 (Adults)

1. *Meganola scripta* (MOORE, 1888), ♂, Pakistan, Slide No.: W 8310
2. *Meganola scripta* (MOORE, 1888), ♀, Pakistan, Slide No.: W 8311
3. *Meganola scripta csoevarii* ssp.n., Holotype, ♂, China, Slide No.: W 8317
4. *Meganola scripta csoevarii* ssp.n., Paratype ♀, China, Slide No.: W 8318
5. *Meganola implicata* sp.n., Paratype, ♀, Thailand
6. *Meganola implicata* sp.n., Paratype, ♂, Thailand
7. *Meganola scriptoides* HOLLOWAY, 2003, ♂**,** Thailand, Slide No.: LGN 779
8. *Meganola scriptoides* HOLLOWAY, 2003, ♀, Thailand, Slide No.: LGN 778
9. *Dialithoptera gemmata* (HAMPSON, 1896), ♀, Nepal, Slide No.: LGN 361
10. *Dialithoptera gemmata* (HAMPSON, 1896), ♂, Thailand
11. *Dialithoptera margarita* sp.n., Holotype, ♂, Thailand, Slide No.: LGN 776
12. *Dialithoptera margarita* sp.n., Paratype, ♀, Thailand, Slide No.: LGN 906

Plate 2 (Genitalia)

1. *Meganola scripta* (MOORE, 1888), ♂, Pakistan, Slide No.: W 8310
2. *Meganola scripta* (MOORE, 1888), ♀, Pakistan, Slide No.: W 8311
3. *Meganola scripta csoevarii* ssp.n., Holotype, ♂, China, Slide No.: W 8317
4. *Meganola scripta csoevarii* ssp.n., Paratype, ♀, China, Slide No.: W 8318
5. *Meganola implicata* sp.n., Holotype, ♂, Thailand, Slide No.: LGN 777
6. *Meganola implicata* sp.n., Paratype, ♀, Thailand, Slide No.: W 8316

Plate 3 (Genitalia, continued)

1. 19. *Meganola scriptoides* HOLLOWAY, 2003, ♂, Thailand, Slide No.: LGN 779
2. 20. *Meganola scriptoides* HOLLOWAY, 2003, ♀, Thailand, Slide No.: LGN 778
3. 21. *Dialithoptera gemmata* (HAMPSON, 1896), ♂, Myanmar, Slide No.: W 8324
4. 22. *Dialithoptera gemmata* (HAMPSON, 1896), ♀, Nepal, Slide No.: LGN 361
5. 23. *Dialithoptera margarita* sp.n., Holotype, ♂, Thailand, Slide No.: LGN 776
6. 24. *Dialithoptera margarita* sp.n., Paratype, ♀, Thailand, Slide No.: LGN 906

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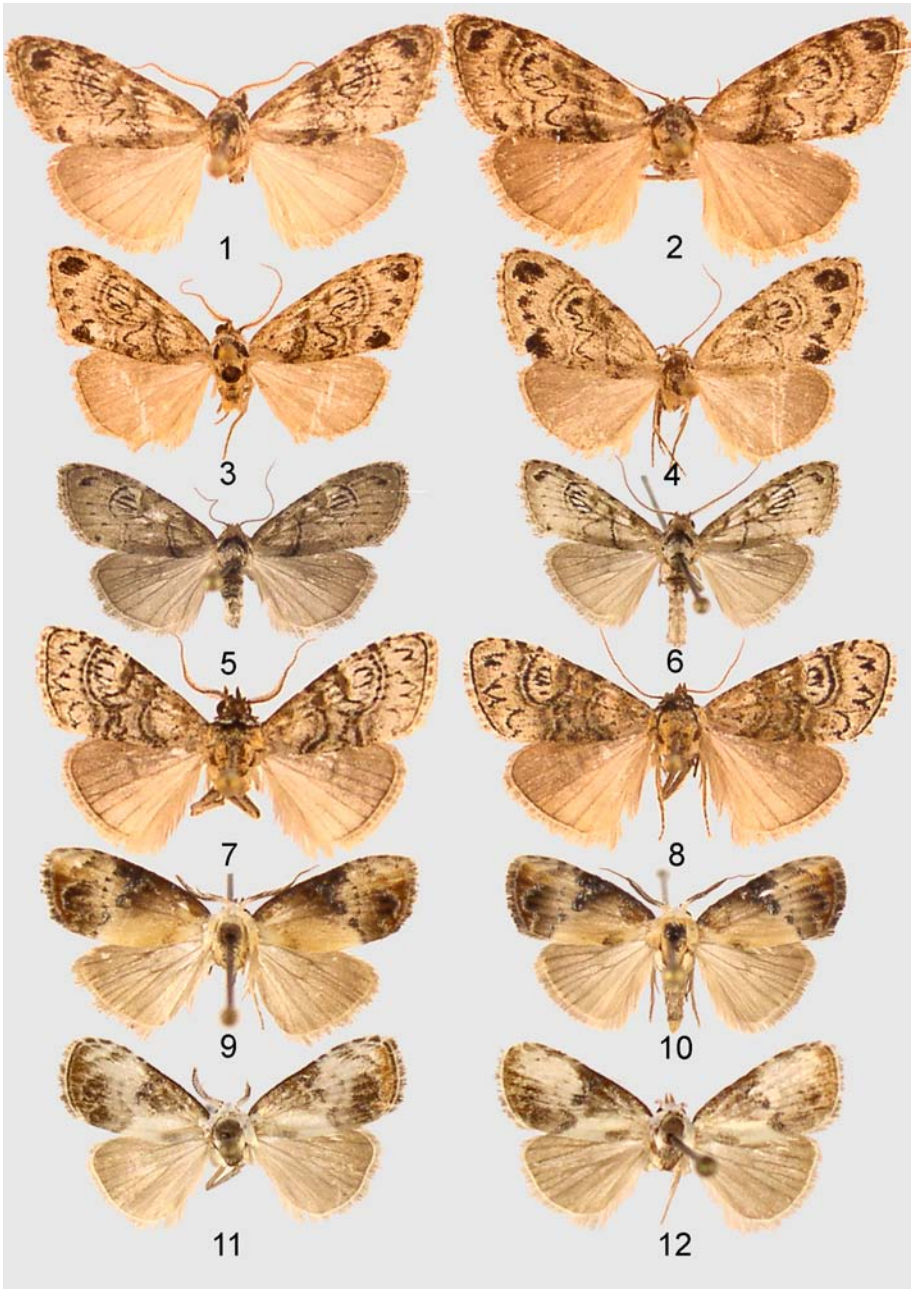

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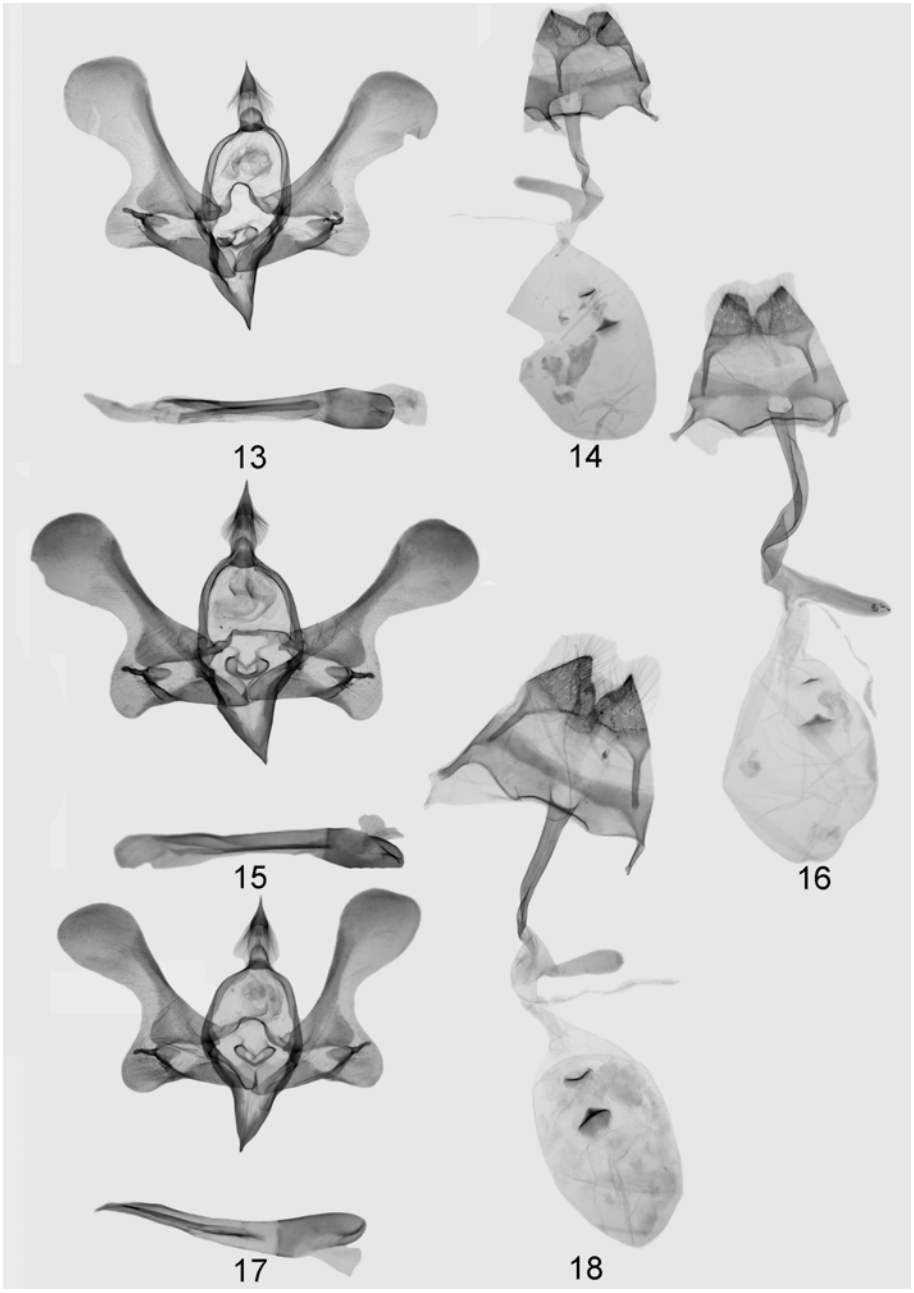

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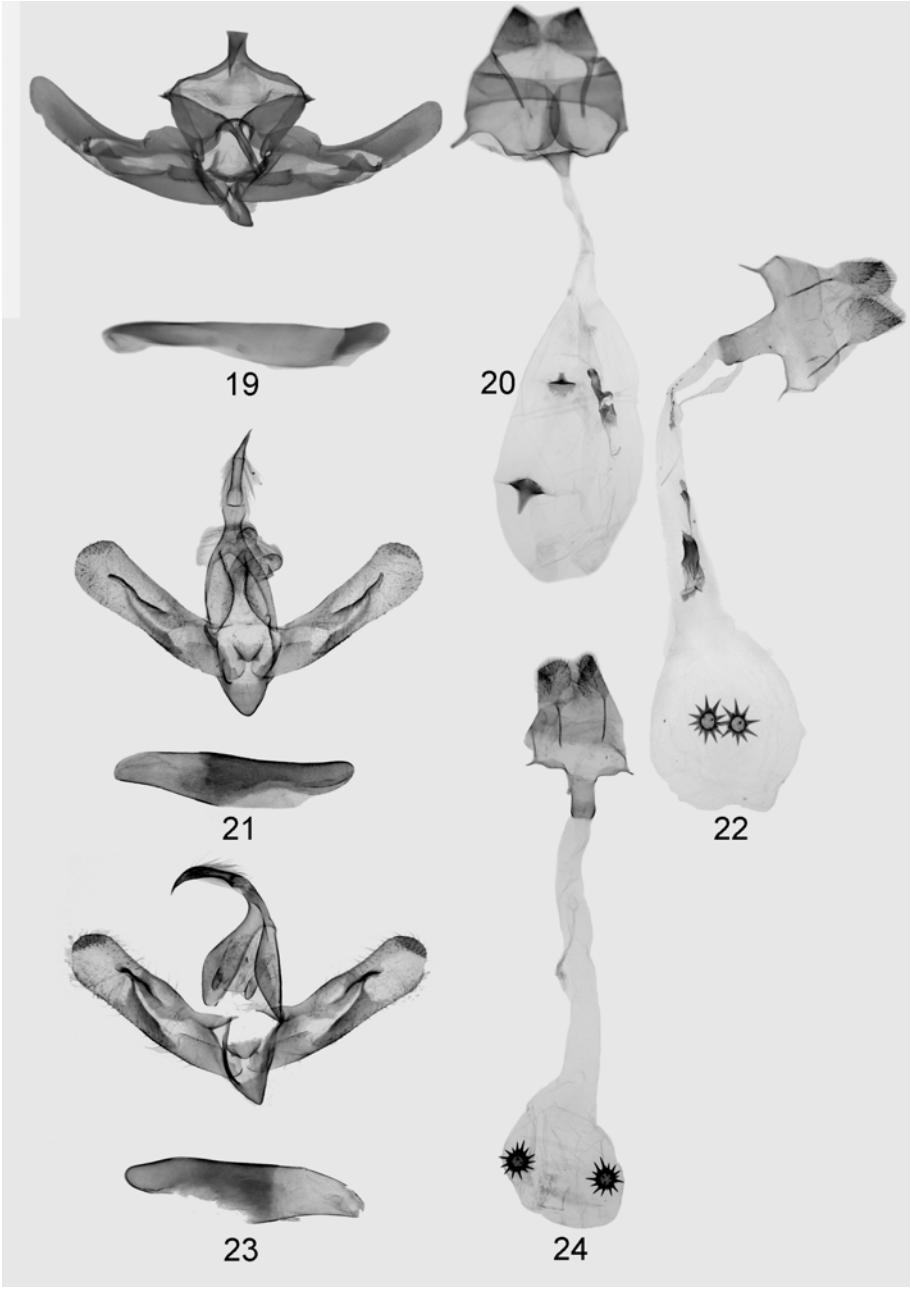

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Literaturbesprechung

GOATER, B., NUSS, M. & SPEIDEL, W. – 2005. Pyraloidea I (Crambidae: Acentropinae, Evergestinae, Heliothelinae, Schoenobiinae, Scopariinae). *In* P. HUEMER & O. KARSHOLT, Microlepidoptera of Europe, Volume 4. Apollo Books, Stenstrup. ISBN 87-88757-33-1.

Volume 4 of Microlepidoptera of Europe was actually published slightly after volume 5, and constitutes at present the most recent volume published in the series. The first volume of Pyraloidea treats the crambid subfamilies Acentropinae, Evergestinae, Heliothelinae, Schoenobiinae and Scopariinae from Europe and partially from surrounding areas. A total of 113 species are diagnosed in detail and figures of the moths, male and female genitalia are given. Information is added to the life history and distribution of the species. The distribution data are summarized in a table showing the records for each European country. The general introduction explains the morphology of the Pyraloidea, the discrimination of Pyralidae and Crambidae, collection and preparation techniques. The adults are beautifully illustrated on 7 colour plates. Excellent figures of male and female genitalia, partly drawings and partly fotos, allow the safe identification of all species. 21 pages of references contain the main literature existing on Pyraloidea. The book was written by three authors, leading specialists in the subfamilies treated, but the structure of the volume is in the same uniform style which is consistent over the whole series. Microlepidoptera of Europe 4, as well as the whole series now consisting of 5 volumes and approximately 10 to 20 more in total, is strongly recommended to all who study and collect microlepidoptera.

Thomas J. WITT

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Literaturbesprechung

SLAMKA, F. – 2004. Die Tagfalter Mitteleuropas. Östlicher Teil. Bestimmung, Biotope und Bionomie, Verbreitung, Gefährdung. 288 Seiten. Bratislava, Verlag František Slamka, Preis 35 Euro, zu beziehen über http://home.nextra.sk/fslamka.

Der vorliegende handliche Taschenführer behandelt die Tagfalter der Slowakei, Böhmens, Mährens, Polens, Ungarns und der Karpatenukraine. Ein Aufstöhnen „noch einmal ein Tagfalterbuch" ist in diesem Fall überhaupt nicht angebracht: Die behandelten östlichen Teile Mitteleuropas sind in der gängigen Literatur meist sträflich vernachlässigt, obgleich sie faunistisch äußerst reichhaltig und interessant sind! Im allgemeinen Teil werden charakteristische Lebensräume vorgestellt. Von vielen dieser Lebensräume, z. B. Steppe und Torfmoore, gibt es im behandelten Gebiet im Gegensatz zum westlichen Mitteleuropa noch große und relativ unangetastete Reste. Die verschiedenen Naturräume werden im allgemeinen Teil schön bebildert dargestellt, ebenso wie Bedrohung und Schutz. Außerdem ist im allgemeinen Teil der Körperbau, die Variabilität und Entwicklung (Metamorphose) übersichtlich dargestellt sowie die Grundlagen der zoologischen Nomenklatur erklärt. Im speziellen Teil werden alle 193 abgehandelten Arten mit zahlreichen farbigen Lebendfotos und allen zur Determination wichtigen Details dargestellt. Zusätzlich befinden sich am Ende des Buches 60 exzellente Farbtafeln mit mehr als 1050 Bildern, die sämtliche Arten in natürlicher Größe, ober- und unterseits, oftmals in mehreren Exemplaren und Geschlechtern darstellen. Bei der hervorragenden Ausstattung und Bebilderung ist es wirklich erstaunlich, dass dennoch das Buch in einem exkursionstauglichen Format (12,3 x 17 cm) gehalten werden konnte.
Die Lektüre dieses an versteckter Stelle erschienenen preiswerten Büchleins, das in deutscher Sprache abgefaßt ist, kann jedem Tagfalterliebhaber auch außerhalb des abgehandelten Gebietes nur empfohlen werden!

Wolfgang SPEIDEL

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