

Revision of the genus *Inouenola* László, Ronkay & Witt, 2010 (Lepidoptera, Noctuoidea, Nolidae, Nolini) with description of 6 new species

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Abstract This paper contains the revision of the genus *Inouenola* László, Ronkay & Witt, 2010 and presents the checklist of the known taxa and their distribution and the description of six new species (*Inouenola brunneolineata*, *I. tertia*, *I. secunda*, *I. prima*, *I. micropuncta*, and *I. nigropunctata* spp. n.) from South East Asia, with 24 colour photos and 18 genitalia figures.

Keywords *Inouenola* · Nolini · Nolidae · Noctuoidea · New species · New status · South East Asia

Abbreviations

BM	Number of genital slide of BMNH
BMNH	British Museum of Natural History, London
HNHM	Hungarian Natural History Museum, Budapest
LGN	Number of genital slide made by Gy. M. László

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MWM	Museum Witt, Munich
RL	Number of genital slide made by L. Ronkay
RMNH	Naturalis, Biodiversity Center, Leiden
SMNK	State Museum of Natural History, Karlsruhe
W	Number of genital slide of Museum Witt
ZMUC	Zoological Museum of the University, Copenhagen

Introduction

The family Nolidae is one of the large and very diverse clades of the superfamily Noctuoidea. The tribe Nolini is a generally arboreal group, displaying an extreme species richness and diversity in South East Asia, both in the continent and the archipelago. This unexpectedly high diversity is recognised rather recently, more than half of the actually known species has been discovered and described in the last two decades and the number of the new discoveries increases rapidly.

The tribe Nolini is one of the few large groups within the Noctuoidea, which are considered to feed exclusively on ligneous plants. Although the early stages and the foodplants are unknown for the majority of the described species but all recorded larvae feed on trees and shrubs. The great diversity of the Nolini indicates their ecological importance in their habitats and though actually no report is known about mass appearance of any Nolini species, certain species may be potential pest of forestry. A few Nolini are highly specialised to their foodplants, for instance, Nolini is one of the few lepidopterous groups a species of which is associated also with the mangrove: Inoue (2001) mentioned that *Nola angustipennis* Inoue, 1982 was found on the Okinawa Islands feeding on the leaves of *Kandelia candel* (Rhizophoraceae). This widespread Asiatic mangrove species has been splitted

into two taxa by Sheue et al. (2003), therefore the actual name of the foodplant is *Kandelia obovata*.

During the investigation of the recently collected, vast Nolini material the authors found six further *Inouenola* species which proved to be yet undescribed. Present paper contains—besides the description of the new species—the revised checklist of the genus, the new records of distribution and the illustrations of the habitus and the genitalia of each species.

Materials and methods

The studies are based on the thorough study of the Nolini material of The Museum Witt, Munich (MWM), The Natural History Museum, London, The Zoological Museum of the University, Copenhagen (ZMUC), The State Museum of Natural History, Karlsruhe (SMNK), The Hungarian Natural History Museum (HNHM), Budapest, and the private collection of Gábor Ronkay.

The morphological studies were made by the ordinary standards. The external morphological features were studied by a Leica binocular microscope, each specimen and its labels are documented in digital images which are archived in the photo database of the Heterocera Ltd. collection. The genitalia are prepared by the standardised method after maceration in KOH and the permanent slides are mounted in Euparal. All genitalia slides are photographed by a Nikon Eclipse 80i photomicroscope with Nikon DS-Fi1 digital camera.

Systematic part

Checklist

Inouenola László, Ronkay & Witt, 2010

Type species *Meganola diversalis* Inoue, 1991, *Tyô to Ga* 42(2): 79, by original designation.

diversalis species-group:

diversalis (Inoue 1991)

brunneolineata sp. n.

tertia sp. n.

grimalis species-group:

secunda sp. n.

prima sp. n.

micropuncta sp. n.

grimalis (Hampson 1893)

pallescens (Wileman and West 1929)

nigropunctata sp. n.

Characterisation of the genus

The genus *Inouenola* László, Ronkay & Witt, 2010 was established with the type-species *diversalis* Inoue, 1991,

which was originally described in the genus *Meganola* Dyar, 1898; however the configuration of its male genitalia suggests closer relationship with *Manoba* Walker, 1864. The generic delineation of *Inouenola* (László et al. 2010) was based on the configuration of the male genitalia of the type-species, and two further species, *I. grimalis* (Hampson 1893) and *I. pallescens* (Wileman and West 1929), this latter taxon is considered here as a species distinct from *I. grimalis* (**stat. n.**). The male genitalia differ from those of the characteristically uniform configuration of *Manoba* by the shorter and thicker, less curved uncus, the shorter, more or less quadrangular or slightly tapering, apically truncate valva, the more robust harpe having more elongated sacular base, the very long and narrow vinculum, and the much longer aedeagus. The configuration of the female genitalia of *Inouenola* is even more characteristic due to the conspicuously long and thin tubular part of corpus bursae and the remarkably elongate, dagger- or claw-like pair of processes of signum bursae.

The genus comprises two main lineages displaying differential genital features. The members of the *diversalis* species-group are characterised by the long ductus bursae and the comparatively short tubular part of corpus bursae (the small cervix bursae and the origin of ductus seminalis are located in the mid-section of the long tubular part of the female genitalia), and the more or less equally sized and flattened, knife-shaped signa. In the male genitalia, the erect part of the harpe is relatively short and situated rather medially in the ventral valval plate. In the *grimalis*-group, the ductus bursae is much shorter, the cervix bursae and the origin of ductus seminalis are located close to the ostium bursae, the signa are conspicuously unequal (the smaller, more proximal one is less than half as long as the larger, more distally situated one), and both are much finer, thinner than those of the taxa of the *diversalis*-group. In the males, the erect part of the harpe is more oblique and situated most often more distally in the valval plate.

Distribution. The area of the genus is restricted to Indochina (Thailand, Vietnam, Cambodia; the northern part of Malaysia), the SW part of China (Zheng and Han 2013), and the north-western part of the archipelago: China (Taiwan), the Philippines, Sri Lanka, and Indonesia (Sumatra, Bali).

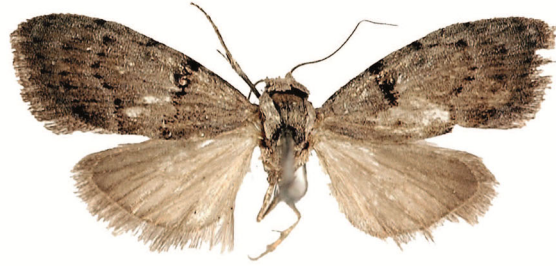
Characterisation of the species of *Inouenola*

Inouenola diversalis (Inoue 1991) (Plate 1, Figs. 1, 2; Plate 2, Genitalia Figs. 1, 2).

Meganola diversalis Inoue, 1991, *Tyô to Ga* 42(2): 79, Figs. 1C, 1D, 2C, 3C. Type-locality [China-Taiwan] Rushan-Unchen (=Lushan Spa), Nantou Shien (=Nantou County). Holotype male, in coll. BMNH.



1. *Inouenola diversalis* (Inoue, 1991) Holotype male, Taiwan, Nantou Co. (wingspan 17 mm)



2. *Inouenola diversalis* (Inoue, 1991) Paratype female, Taiwan, Nantou Co. (wingspan 18 mm)



3. *Inouenola brunneolineata* sp. n. Holotype male, Indonesia, Sumatra (wingspan 16 mm)



4. *Inouenola brunneolineata* sp. n. Paratype male, Indonesia, Sumatra (wingspan 14 mm)



5. *Inouenola tertia* sp. n. Paratype male, Philippines, Mindanao (wingspan 17 mm)



6. *Inouenola tertia* sp. n. Paratype female, Philippines, Mindanao (wingspan 17 mm)

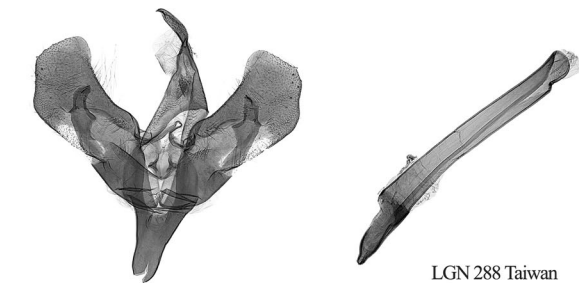


7. *Inouenola secunda* sp. n. Paratype male, Indonesia, Sumatra (wingspan 10 mm)

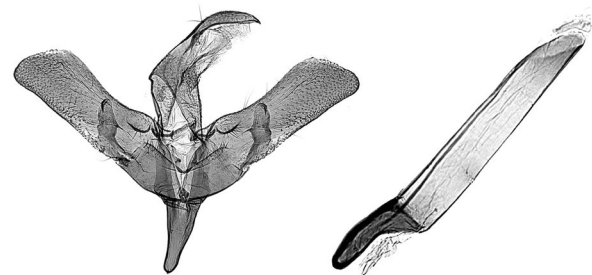


8. *Inouenola secunda* sp. n. Holotype female, Indonesia, Sumatra (wingspan 14 mm)

Plate 1 *Inouenola*_Colour_Plate_1: Figs. 1–8; *Inouenola*_Genitalia_Plate_1: Gen. Figs. 1–6

Gen. Fig. 1. *Inouenola diversalis* (Inoue, 1991)

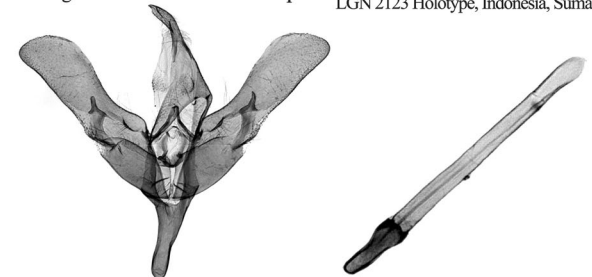
LGN 288 Taiwan

Gen. Fig. 4. *Inouenola brunneolineata* sp. n.

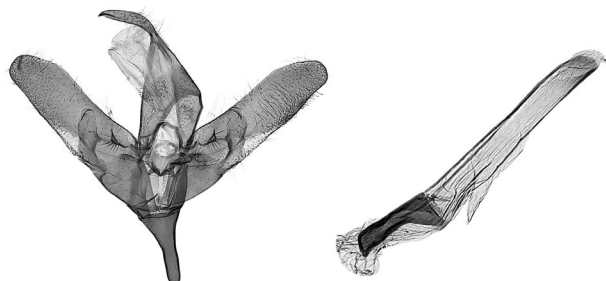
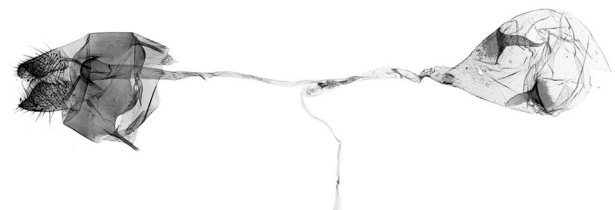
LGN 2123 Holotype, Indonesia, Sumatra

Gen. Fig. 2. *Inouenola diversalis* (Inoue, 1991)

LGN 474 Taiwan

Gen. Fig. 5. *Inouenola tertia* sp. n.

LGN 642 Holotype, Philippines, Mindanao

Gen. Fig. 3. *Inouenola brunneolineata* sp. n. LGN 1664 Paratype, Indonesia, SumatraGen. Fig. 6. *Inouenola tertia* sp. n.

LGN 1506 Paratype, Philippines, Mindanao

Plate 1 continued

Type material examined

Holotype male, “Formosa, Nantow, Rushan-Unchen, 3-6.IV.1972, M. Owada”; slide No. BMArct. 4408, paratype female, with the same data as the holotype, slide No. Inoue 12227, both in coll. BMNH.

Additional material examined

China (Taiwan). Five males, one female, Taichung County, Hui-sun Experimental Forest, Guandashi LTER site, 950, 121°02' E, 24°04' N, 12-13.IV.1997, leg. L. Peregovits & A. Kun (coll. HNHM and G. Ronkay). Thailand. Two males, Prov. Chiang Mai, between Fang and Nor Lae, 1,600 m, 99°06' E, 20°02' N, 12.XI.2002, leg. B. Herczig & G. Ronkay, slide No. LGN 992 (MWM 8469; coll. MWM and G. Ronkay). Cambodia. Two males, Prov. Kampot, Bokor N.P., Hill Station, 1,025 m, 10°37'37" N, 104°01'33" E, 19-21.I.2006, leg. G. Csorba & G. Ronkay (coll. MWM). Vietnam. One female, Tam Dao, 60 km NW Hanoi, 950 m, 21°34' N, 105°20' E, 17.X.1994, leg.

V. Sinjaev, slide No. LGN 475 (coll. MWM); one male, Prov. Lao Cai, Sa Pa district, Cat-Cat village, Frontier Vietnam Base Camp, 22°19'36.4" N, 103°49'46.1" E, 1,250 m, 4-8.VIII.1998, leg. A. Kun, slide No. LGN 2137 (coll. HNHM). Malaysia. One female, Pahang State, Cameron Highlands, Tanah Rata, 21.III.-2.IV.1995, slide No. LGN 476 (coll. MWM).

Diagnosis. The external appearance of the type-species of the genus is most similar to that of *Inouenola secunda* and *I. prima*, but *I. diversalis* has darker, graphite-grey forewings (*I. secunda* is pale brown, *I. prima* is light brownish-grey), with stronger and more oblique black antemedial line than those of the related species. Wingspan 14-18 mm.

The male genitalia of *I. diversalis* differ from those of all congeners by the short and broad, distally dilated and somewhat arched valvae and the medially positioned, short, and apically pointed harpe.

In the female genitalia, the broad, elliptical, sclerotised ostium bursae, the broadest distal part of ductus bursae and the large, flattened, knife-shaped signa distinguish *I. diversalis* from the related species.

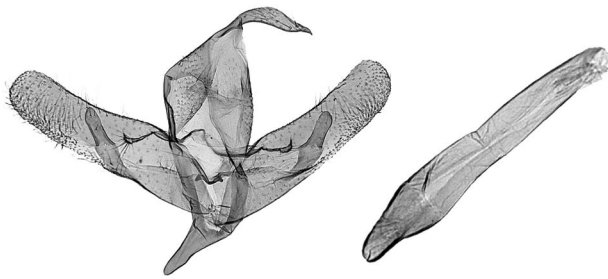
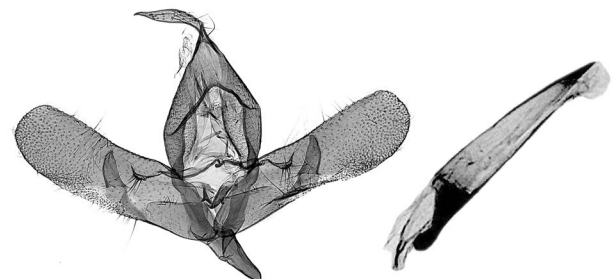
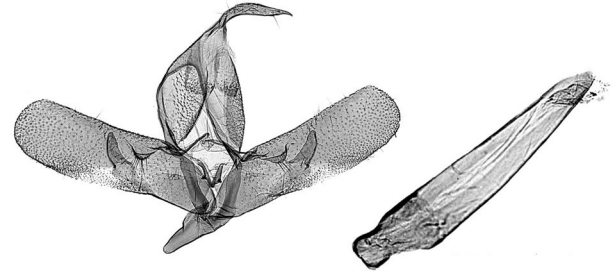
Gen. Fig. 7. *Inouenola secunda* sp. n. LGN 2033 Paratype, Indonesia, SumatraGen. Fig. 10. *Inouenola prima* sp. n. LGN 1649 Paratype, Indonesia, SumatraGen. Fig. 8. *Inouenola secunda* sp. n. LGN 1691 Holotype, Indonesia, SumatraGen. Fig. 11. *Inouenola prima* sp. n. LGN 2125 Paratype, Indonesia, SumatraGen. Fig. 9. *Inouenola secunda* sp. n. LGN 1655 Paratype, Indonesia, SumatraGen. Fig. 12. *Inouenola prima* sp. n. LGN 2201 Paratype, Indonesia, Sumatra

Plate 2 *Inouenola_Genitalia_Plate_2*: Gen. Figs. 7–12; *Inouenola_Colour_Plate_2*: Figs. 1–8

Distribution. The species is distributed in the continental SE Asia (Indochina: Thailand, Cambodia and Vietnam; northern Malaysia), and in China (Taiwan).

***Inouenola brunneolineata* sp. n.** (Plate 1, Figs. 3, 4; Plate 2, Genitalia Figs. 3, 4).

Holotype. Male, Indonesia, Sumatra, Prapat, Holzweg 2, 18.V.1985, leg. Dr. Diehl, slide No. LGN 2123 (coll. HNHM).

Paratypes. Indonesia, Sumatra. One male, 4 km S of Sidikalang, 1,250 m, 02°41'51" N, 098°18'18" E, 16.II.2002, leg. K. Larsen & M. Fibiger, slide No. LGN 1664 (coll. ZMUC); one male, Dolok Merangir, 180 m, 1977, leg. Dr. E. Diehl, slide No. LGN 2161 (coll. SMNK).

Diagnosis. *Inouenola brunneolineata* has a rather unique external appearance being dissimilar to all known species of the genus expressed by its pale greyish brown forewing ground colour divided to a paler inner and a darker outer part by the thick, oblique, slightly arcuate, dark reddish brown postmedial line; in addition it has a very conspicuous black rounded discal spot in the forewing median area near the costal margin. The closely related *I. diversalis* has greyish forewing ground colour with conspicuous blackish antemedial line; in addition, it lacks the discal spot,

which is characteristic of *I. brunneolineata*. Wingspan 14–16 mm.

In the male genitalia, *I. brunneolineata* has, in comparison with *I. diversalis*, somewhat longer uncus, remarkably narrower and more elongate valva, considerably broader, apically broadly rounded harpe (the harpe of *I. diversalis* is apically pointed) and much narrower vinculum. The simple, thin, medium-long, tubular aedeagus is practically identical in both species.

Female unknown.

Distribution. The species is known only from Sumatra.

***Inouenola tertia* sp. n.** (Plate 1, Figs. 5, 6; Plate 2, Genitalia Figs. 5, 6).

Holotype. Male, Philippines, Mindanao, Kitanglad Mt., Bukidnon, S. Vincenti, 750 m, 8°07' N, 124°55' E, 5.VIII.–15.IX.1993, leg. V. Sinjaev, slide No. LGN 642 (W 22306; coll. MWM).

Paratypes. Philippines, Mindanao. One male and one female, with the same data as the holotype, slide No. LGN 1506 (W 22307; female; coll. MWM). **Luzon.** One male, CAR border Abra/Kalinga, E of Malibcong Basiwag, 17°33' N, 120°59' E, 1,600 m, 16–17.I.2007, leg J.H. Lourens (coll. MWM).



1. *Inouenola secunda* sp. n. Paratype female, Indonesia, Sumatra (wingspan 14 mm)



2. *Inouenola prima* sp. n. Holotype male, Indonesia, Sumatra (wingspan 14 mm)



3. *Inouenola prima* sp. n. Paratype male, Indonesia, Sumatra (wingspan 14 mm)



4. *Inouenola prima* sp. n. Paratype female, Indonesia, Sumatra (wingspan 14 mm)



5. *Inouenola micropuncta* sp. n. Paratype male, Indonesia, Sumatra (wingspan 11 mm)



6. *Inouenola micropuncta* sp. n. Paratype male, Indonesia, Sumatra (wingspan 11 mm)



7. *Inouenola micropuncta* sp. n. Paratype male, Indonesia, Bali (wingspan 11 mm)



8. *Inouenola micropuncta* sp. n. Holotype female, Indonesia, Sumatra (wingspan 11 mm)

Plate 2 continued

Diagnosis. *Inouenola tertia* is externally rather distinct from the other congeners by its uniformly dark brownish-grey forewing, with traces of the strongly interrupted

transverse lines represented by a couple of blackish rounded dots in the basal and pre-median area and a row of smaller dots in the postmedian area. The new species is

most similar externally to *I. brunneolineata*, but has much darker, more greyish forewings, lacking the broad, oblique, dark brown postmedial line, which is characteristic of *I. brunneolineata*. Wingspan 15–17 mm.

In the male genitalia, *I. tertia* has, in comparison with *I. brunneolineata*, slightly shorter uncus, apically somewhat more dilated valva, conspicuously smaller, narrower, thorn-like harpe (it is larger, much broader, apically broadly rounded in *I. brunneolineata*), slightly longer vinculum, and considerably longer and thinner aedeagus.

In the female genitalia, *I. tertia* has a number of specific autapomorphies: the eighth tergite is rather long (it is more than twice as long as in the other congeners), the ductus bursae is conspicuously long (in the other species the ductus bursae is very short as the cervix bursae is located rather distally, close to the ostium bursae), therefore, the tubular part of corpus bursae is relatively short, and the signum complex is built up from a short, quadrangular scobinate plate at the basal section of the tubular part of corpus bursae (this plate is more elongated in the other species) and a pair of equally long dagger-like processes, which are uneven in all but one (*I. diversalis*) members of the genus.

Distribution. The species has been recorded from two large islands of the Philippines (Luzon and Mindanao).

***Inouenola secunda* sp. n.** (Plate 1, Figs. 1, 7, 8; Plate 2, Genitalia Figs. 7–9).

Holotype. Female, Indonesia, North Sumatra, H.W. II. 28 km S Pematang Siantar, near Tigadoluk, 1,050 m, 02°45'52" N, 099°58'20" E, 10.II.2002, leg. K. Larsen & M. Fibiger, slide No. LGN 1691 (coll. ZMUC).

Paratypes. Indonesia, North Sumatra. One female, with the same data as the holotype, slide No. LGN 1655 (coll. ZMUC); one male, Dolok Merangir, 180 m, 4.VI.–1.VII.1976, leg. Dr. E. Diehl, 2–13.VII.1976, slide No. LGN 2033 (coll. SMNK).

Diagnosis. *Inouenola secunda* resembles mostly *I. grisalis* and *I. diversalis* but its forewings are uniformly pale brown, with much paler, more diffuse transverse lines than those of the graphite-grey relatives; in addition, the dark scale-tuft of the antemedial line is larger, more conspicuous than in *I. grisalis* and *I. diversalis*. Wingspan 10–14 mm.

The male genitalia of *I. secunda* are more similar to *Inouenola micropuncta* and *I. prima* than to *I. grisalis* and strikingly dissimilar to *I. diversalis*. The main differences between *I. secunda* and the three related species are as follows: *I. secunda* has, compared to *I. prima*, longer and slenderer, distally less dilated valvae, somewhat longer and distally not tapering, apically evenly rounded harpe and longer, more pointed vinculum; compared to *I. micropuncta*, stronger uncus, slightly broader valvae, somewhat longer, more digitiform harpe and much shorter and

broader, distally less sclerotised aedeagus, with much finer, minute cornuti in the vesica; compared to *I. grisalis*, stronger uncus, longer tegumen, more acute vinculum, longer and slenderer valvae, longer and basally narrower, and more digitiform and apically not pointed harpe.

In the female genitalia, the new species has much shorter tubular distal part of corpus bursae and larger, stronger signa than in *I. micropuncta*; narrower, biarcuate anterior margin of ostium bursae, shorter ductus bursae and somewhat thicker signa than in *I. prima*; somewhat longer tubular distal part of corpus bursae and somewhat longer processes of signum bursae compared to those of *I. grisalis*.

Distribution. The species is known only from Sumatra.

***Inouenola prima* sp. n.** (Plate 1, Figs. 2–4; Plate 2, Genitalia Figs. 10–12).

Holotype. Male, Indonesia, Sumatra, Prapat, Holzweg 3, 18.X.1984; leg. Dr. E. Diehl (coll. HNHM).

Paratypes. Indonesia, Sumatra. One male, from the same locality as the holotype, 24.I.–8.III.1985, leg. Dr. Diehl, slide No. LGN 2124 (coll. G. Ronkay); one male, North Sumatra, Sibayak Mt., 6 km NW of Brastagi, 1,250 m, 03°14' N, 098°29' E, 2.III.2002, leg. K. Larsen & M. Fibiger, slide No. LGN 1649 (coll. ZMUC); one male, Dolok Merangir, 180 m, 4.VI.–1.VII.1976, leg. Dr. E. Diehl, slide No. LGN 2034; one male, Berastagi, 1,500 m, 22–27.XI.1981, leg. A. Schintlmeister, slide No. LGN 2125; one female, from the same locality, 5.II.1984, slide No. LGN 2201 (coll. HNHM).

Diagnosis. *Inouenola prima* is similar to *I. diversalis* expressed by its rather characteristic straight and blackish forewing antemedial line, but the new species has much paler, light brownish-grey forewing ground colour while that of *I. diversalis* is always darker, graphite-grey. Wingspan 10–15 mm.

In the male genitalia *I. prima* has conspicuously narrower, more elongate, apically evenly rounded valva, while the valva of *I. diversalis* is rather broad, apically rounded quadrangular; the harpe of the new species is considerably longer, apically evenly tapering and narrowly rounded, while that of *I. diversalis* is shorter, apically broadly rounded ending in a minute pointed apical process; in addition the vinculum of the new species is somewhat shorter and thinner, less robust compared to that of *I. diversalis*. The simple, medium long, straight tubular configuration of the aedeagus is similar in both species, but that is considerably shorter in *I. prima* than in *I. diversalis*.

In the female genitalia the new species has considerably finer apophyses, much shorter ductus bursae, conspicuously longer and thinner tubular part of corpus bursae compared to those of *I. diversalis*; the scobinate plate in the basal section of tubular part of corpus bursae is remarkably more elongate in *I. prima* than in *I. diversalis*; the length of

the pair of the characteristically elongate processes of signum bursae are different in *I. prima* (distal one is much longer than proximal one), while those are of same length in *I. diversalis*, in addition the processes of signum are considerably finer, narrower in the new species compared to those of *I. diversalis*.

The comparison of the genitalia of *I. prima* with *I. secunda* is given above, in the diagnosis of the latter new species. Summarizing the main differences, *I. prima* has thinner uncus, broader and distally more dilated valvae with apically tapering and pointed harpe, somewhat shorter vinculum and shorter aedeagus (males); considerably longer ductus bursae and finer, thinner signa than in its congener.

The genitalia of *I. prima* differ from those of *I. micropuncta* by the considerably broader valvae with apically pointed harpes and the much shorter and thicker aedeagus with reduced distal sclerotisation and armature of the vesica in the male; much shorter tubular part of corpus bursae and thicker signa in the female.

Distribution. The species is found only in Sumatra.

***Inouenola micropuncta* sp. n.** (Plate 1, Figs. 5–8; Plate 2, Genitalia Figs. 13, 14).

Holotype. Female, Indonesia, North Sumatra, 4 km S of Sidikalang, 1,250 m, 02°41'51" N, 098°18'18" E, 16.II.2002, leg. K. Larsen & M. Fibiger, slide No. LGN 1678 (coll. ZMUC).

Paratypes. Indonesia, Sumatra. One male, with the same data as the holotype, slide No. LGN 1677 (coll. G. Ronkay); one male, near Tigadoluk, 1,050 m, 02°45'52" N, 099°58'20" E, 4.III.2002, leg. K. Larsen & M. Fibiger (coll. ZMUC); one male, Dolok Merangir, 180 m, 2–13.VII.1970, leg. Dr. E. Diehl, slide No. LGN 2162; one male, from the same locality, 5.XI.1972–25.II.1973 (coll. SMNK); one male, one female, Fort de Kock, 920 m, August 1921, leg. E. Jacobson, slide No. LGN 2294 (female; coll. RMNH). **Indonesia, Java.** One male, W Java, Preanger, 5,000 ft, Anthony, slide No. LGN 2293 (coll. RMNH). **Indonesia, Bali.** One male, Batoeriti, 3500', VI.1935, leg. J.P.A. Kalis (coll. BMNH). **Cambodia.** One male, Prov. Kampot, Bokor N.P., Hill Station, 1,025 m, 10°37'37" N, 104°01'33" E, 19–21.I.2006, leg. G. Csorba & G. Ronkay (coll. MWM).

Diagnosis. *Inouenola micropuncta* is easily distinguishable from most *Inouenola* species by its characteristically pale brownish-grey forewings, scattered sparsely with conspicuous blackish dots representing the traces of transverse lines. In the only similar species, *Inouenola nigropunctata* sp. n., the crosslines consist of much larger dark dots and the hindwings are darker, especially in the males. Wingspan 10–12 mm.

In the male genitalia, *I. micropuncta* shows closer relationship with *I. secunda* and *I. prima* but the new

species has remarkably longer and thinner aedeagus than those of the other two relatives, with long sclerotised bars and acute-conical cornuti which are missing from the other two species, the tegumen is slenderer, the distal part of the valva is narrower than in the *I. secunda* and *I. prima*; in addition, the apical part of harpe is much less tapering and not pointed, as in *I. prima*. The male genitalia of *I. micropuncta* and *I. nigropunctata* are compared in detail in the diagnosis of the latter species; the main differences between them are the longer and more flattened, apically more rounded harpe, and the much longer and thinner aedeagus of *I. micropuncta*, with long, sclerotised bars and well-developed cornuti in the vesica.

In the female genitalia, *I. micropuncta* has conspicuously longer and thinner tubular part of corpus bursae and much finer, slenderer processes of the signa than those of all other members of *Inouenola*.

Distribution. The new species has been recorded from three islands of Indonesia (Sumatra, Java, and Bali) and from Cambodia.

***Inouenola grisalis* (Hampson 1893)** (Plate 3, Figs. 1–3; Genitalia Figs. 15, 16).

Nola grisalis Hampson, 1893, *Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum* 9: 15, 88, pl. 158, Fig. 9. Type-locality [Sri Lanka] Ceylon, Pundaloya. Lectotype male, in coll. BMNH.

Type material examined

Lectotype male, [Sri Lanka] Ceylon, Pundaloya, March., slide No. LGN 707 (BMNoct. 18187) (coll. BMNH); paralectotype, female, Ceylon, Pundaloya, March, slide No. LGN 706 (BMNoct. 18186) (coll. BMNH).

Additional material examined

Vietnam. One male, Prov. Nghe An, Distr. Que Phong, Ban Khom, 280 m, 19°40.5' N, 104°54.1' E, 21–23.I.1999 leg. G. Ronkay, slide No. LGN 1181 (coll. MWM).

Diagnosis. The *I. grisalis* lineage comprises three known species with the forewing antemedial line angled below costa and the erect part of harpe is positioned more ventrally in the border of the distal third of the valva; the harpes of the other congeners are located more proximally, most often in the middle section of the valva and the erect part is positioned further from the ventral margin than in the members of the *I. grisalis* species-complex. *I. grisalis* is darker than the other two species, the transverse lines are more continuous than in *I. pallescens*, the dark scale-tuft at antemedial line is smaller and paler than in the latter

species, while the wing pattern of *I. nigropunctata* is quite different, consisting of large, dark dots, similarly to that of *I. micropuncta*. Wingspan 10–17 mm.

The male genitalia of *I. grimalis* differ from those of the other two species by the proportionally shorter and generally broader valvae with the basally broadest harpe with the shortest and broadest erect part; the apex of vinculum is more rounded than in the two closely related taxa, and the aedeagus is thicker than in *I. pallescens*.

The female genitalia of the three species cannot be compared, due to the lack of females of the other two species. The female genitalia of *I. grimalis* are characterised by the weakly sclerotised ostium bursae, the short ductus bursae, the long tubular part of corpus bursae, the elliptical-ovoid proximal part of corpus bursae, and the strongly unequal pair of signum bursae (the smaller (more proximal) signum is very small).

Distribution. The species is known from Sri Lanka, Vietnam and SW China (Yunnan).

Inouenola pallescens (Wileman and West 1929) (Plate 3, Figs. 4–6; Genitalia Fig. 17).

Nola pallescens Wileman and West, 1929, *Annals and Magazine of Natural History* 10(3): 191. Type-locality [China-Taiwan] Formosa, Kanshirei. Holotype male, in coll. BMNH.

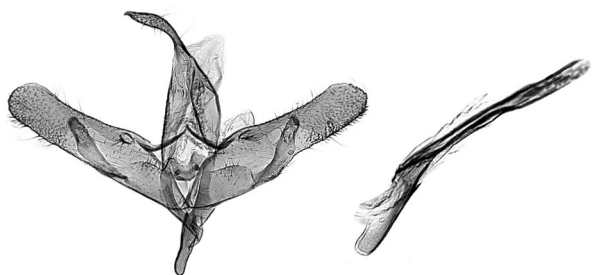
Type material examined

Holotype male, [China: Taiwan] Formosa, Kanshirei, 17.IV.1906, A.E. Wileman, 1913-180, slide No. BMArct. 721 (coll. BMNH).

Additional material examined

China (Taiwan). One male, Pingtung County, 10 km E of Mutan, 400 m, 7–8.IV.1997, leg. Csorba & Ronkay (coll. HNHM); two males, Taipei County, Pi Hu, 450 m, 121°45' E, 24°54' N, 4–5.IV.1997, leg. L. Peregovits & A. Kun, slide No. LGN 1503 (coll. MWM).

Diagnosis. *Inouenola pallescens* is considered as an allopatric sister-species of *I. grimalis*. It differs from its more



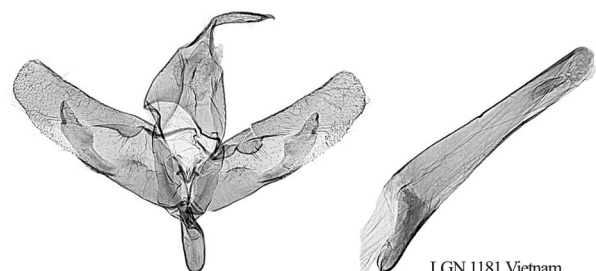
LGN 1677 Paratype, Indonesia, Sumatra LGN 2162 Paratype, Indonesia, Sumatra
Gen. Fig. 13. *Inouenola micropuncta* sp. n.



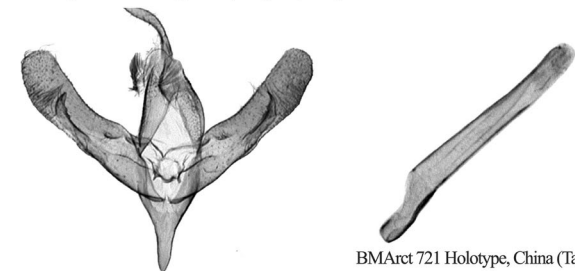
LGN 1678 Holotype, Indonesia, Sumatra
Gen. Fig. 14. *Inouenola micropuncta* sp. n.



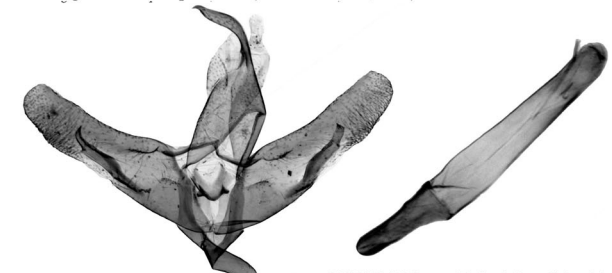
Gen. Fig. 15. *Inouenola grimalis* (Hampson, 1893) LGN 706 Paratype, Sri Lanka



Gen. Fig. 16. *Inouenola grimalis* (Hampson, 1893)



Gen. Fig. 17. *Inouenola pallescens* (Wileman & West, 1929)



Gen. Fig. 18. *Inouenola nigropunctata* sp. n.

LGN 1094 Holotype, Thailand, Prov. Chiang Ma

Plate 3 *Inouenola*_Genitalia_Plate_3: Gen. Figs. 13–18; Fig. 6. *Inouenola*_Colour_Plate_3: Figs. 1–8



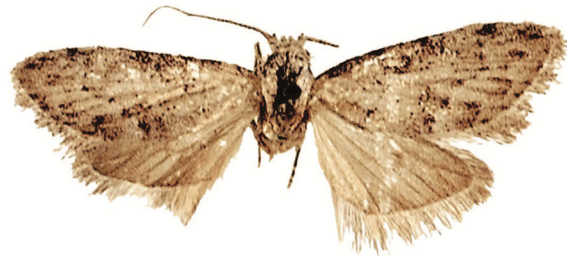
1. *Inouenola grisalis* (Hampson, 1893) Holotype male, Sri Lanka (wingspan 17 mm)



2. *Inouenola grisalis* (Hampson, 1893) Paratype female, Sri Lanka (wingspan 15 mm)



3. *Inouenola grisalis* (Hampson, 1893) male, Sri Lanka (wingspan 10 mm)



4. *Inouenola pallescens* (Wileman & West, 1929) Holotype male, Taiwan, Kanshirei (wingspan 12 mm)



5. *Inouenola pallescens* (Wileman & West, 1929) male, Taiwan, Taipei (wingspan 13 mm)



6. *Inouenola pallescens* (Wileman & West, 1929) male, Taiwan, Taipei (wingspan 13 mm)



7. *Inouenola nigropunctata* **sp. n.** Holotype male, Thailand, Prov. Chiang Mai (wingspan 14 mm)



8. *Inouenola nigropunctata* **sp. n.** Paratype male, Thailand, Prov. Chiang Mai (wingspan 13 mm)

Plate 3 continued

southerly distributed twin species by its paler, more whitish-grey forewing ground colour, more indistinct crosslines and larger, more conspicuous dark scale-tuft at the ante-medial line. Wingspan 12–13 mm.

The male genitalia of the two species are rather similar but the valvae of *I. pallescens* are narrower, with more arched costa, thinner basal and longer, more acute erect part of harpe, the uncus is somewhat thicker distally, the vinculum is longer, with more pointed tip, and the aedeagus is slenderer, more tubular, less dilated at sinus penis.

Distribution. The species is known as endemic to China (Taiwan).

***Inouenola nigropunctata* sp. n.** (Plate 3, Figs. 7, 8; Genitalia Fig. 18).

Holotype. Male, Thailand, Prov. Chiang Mai, between Chiang Dao and Kariang, 900 m, 98°48' E, 19°25' N, 26.X.2002, leg. B. Herczig & G. Ronkay, slide No. LGN 1094 (coll. G. Ronkay).

Paratype. Thailand. One male, with the same data as the holotype (coll. MWM).

Diagnosis. The new species differs externally from the other two closely related species of the *I. grimalis* species-complex and resembles *I. micropuncta* by its conspicuously interrupted crosslines consisting of large dark dots. These dots are, however, larger than those of *I. micropuncta*, the crosslines are less continuous, and the hindwings of *I. nigropunctata* are darker, more brown–grey suffused than in *I. micropuncta*. Wingspan 13–14 mm.

The male genitalia of *I. nigropunctata* differ from those of *I. micropuncta* by the slenderer basal bar and the shorter, more arched and apically pointed harpe, the somewhat thicker aedeagus lacking the stronger sclerotised bars and the strong cornuti of the vesica; in addition, the uncus of *I. nigropunctata* is somewhat longer and more sinuous and the distal third of the valva is more tapering than in *I. micropuncta*.

Female unknown.

Distribution. The species is known from the type-locality (North Thailand) only.

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