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A new *Xylostola* Hampson, 1908 species from eastern and south-eastern Asia (Lepidoptera, Noctuidae, Xyleninae)

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Abstract: The eastern Asiatic species of the *Xylostola indistincta* (Moore, 1882) species complex are revised and a new species, *Xylostola jamesyoungi* sp. nov. is described. The adults and the genitalia of both sexes are illustrated for three species: *X. indistincta*, *X. jamesyoungi*, and the African *X. punctum* Berio, 1956. A lectotype is designated for *X. indistincta*.

Keywords: Noctuoidea, Himalayan-Sino-Pacific region.

INTRODUCTION

Our comparative study of the Taiwanese and southern Himalayan populations of certain Xyleninae (Noctuidae) species provided surprising results. One of these species was *Xylostola indistincta* (Moore, 1882), for which the genitalia of the Nepalese and Taiwanese moths displayed striking differences in both sexes while their external appearance was more or less the same. Our detailed survey of *X.* "*indistincta*" populations revealed that the distribution of the true *X. indistincta* is limited to Central and eastern Nepal and the eastern Indian Himalayas (West Bengal, Sikkim) while the other populations distributed from the Kanchenjunga Himal in Nepal (occurring sympatrically with *X. indistincta*) throughout Bhutan, Indochina, Northern Malaysia, southern China (Shaanxi, Sichuan, Yunnan, Xizang, Guangxi, Hong Kong) to Taiwan represent an unnamed species, which is described below. It is worth mentioning that *X.* "*indistincta*" (*auctorum*, *nec* Moore) is known also from the southern parts of India and Sri Lanka, the Philippines, the countries of Sundaland, Wallacea and New Guinea (see Holloway, 1989); the results of detailed investigations of these populations will be published later, in a separate paper.

MATERIAL AND METHODS

This study is based on traditional taxonomic methods involving material of state museums and private collections, electronic databases, and digitalised microscopic slides. We revised the type material comprehensively and other important voucher specimens from some of the internationally important collections (see Abbreviations).

The genitalia dissections were performed with the technique published by Robinson (1976), with certain modifications (Fibiger & Goater, 1997). Potassium hydroxide (15% solution) was used to macerate the full abdomen. The cleaned genital capsule, everted vesica and female copulatory organ were dehydrated in 96 % iso-propanol. The weakly sclerotized structures were stained with eosin red and then mounted on slide in Euparal.

The images are preserved in the photo catalogue of Heterocera Press Ltd, Budapest, the image database of the Muséum d'histoire naturelle, Geneva, and the database of NEFU.

Terminology of genitalia follows Zilli *et al*. (2009).

ABBREVIATIONS

HHL	genitalia slides prepared by Hui-Lin Han;
HNHM	Hungarian Natural History Museum, Budapest, Hungary;
KST	genitalia slides prepared by Sándor Tibor Kovács;
MFN	Museum für Naturkunde (formerly Zoological Museum of the Humboldt University, ZMHU), Berlin, Germany;
MHNG	Muséum d'histoire naturelle, Geneva, Switzerland;

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MHNG ENTO Entomological collections of Coleoptera, Diptera, Hymenoptera and Lepidoptera at the MHNG
MNHN Muséum national d'histoire naturelle, Paris, France;
NEFU School of Forestry, Northeast Forestry University, Harbin, China;
NHMUK Natural History Museum (formerly British Museum Natural History, BMNH), London, United Kingdom;
NHMW Natural History Museum, Vienna, Austria;
NMNS National Museum of Natural Science, Taichung, Taiwan;
OP genitalia slides prepared by Oleg Pekarsky;
RL genitalia slides prepared by László Ronkay;
SMNS Staatliches Museum für Naturkunde (State Museum of Natural History), Stuttgart, Germany;
TBRI Taiwan Biodiversity Research Institute, Nantou, Taiwan (= ESRI - Endemic Species Research Institute, Nantou; the name of the institution "ESRI" has been changed to "TBRI" in 2023);
TFRI Taiwan Forestry Research Institute, Taipei, Taiwan.

SYSTEMATIC PART

Genus *Xylostola* Hampson, 1908

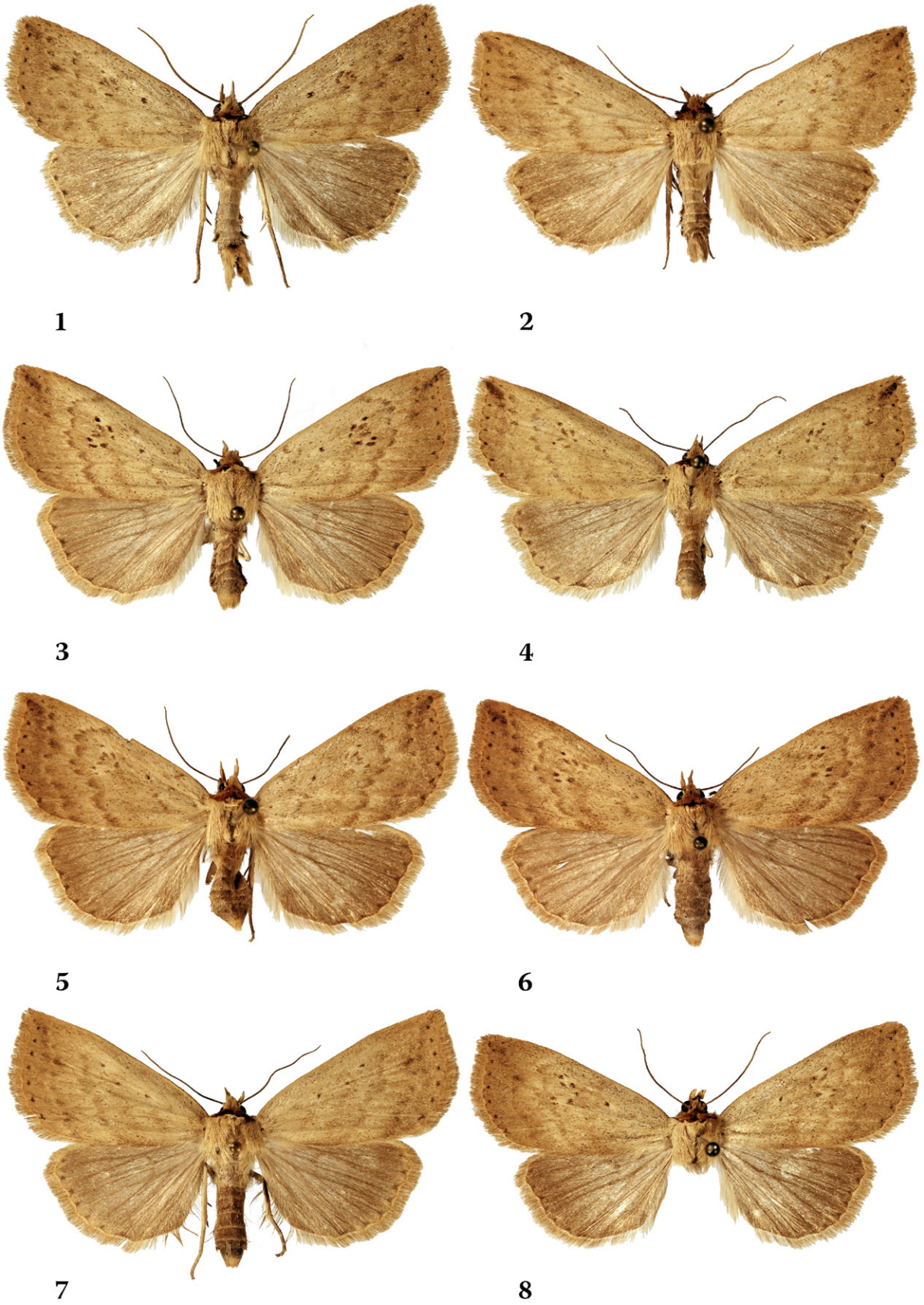
Xylostola Hampson, 1908: 10.

Type species: *Vapara indistincta* Moore, 1882, by subsequent designation by Hampson, 1910.
Taxonomy and nomenclature: The genus was erected by Hampson (1908) without mentioning its species content. A year later, he described the new species *Xylostola olivata* Hampson, 1909 without designating it as the type species of the genus. Finally, Hampson (1910) designated *Vapara indistincta* Moore, 1882, as the type species of *Xylostola*.
This uncertainty was first solved by Nye (1975) who considered *Xylostola* as "Available, but without included species until Hampson 1910, ibidem **9**: xii, 335." and followed the decision of Hampson for treating *indistincta* as the type species of the genus. Subsequently, Poole (1989) mentioned *X. olivata* as type species, treating the first valid combination of a species with *Xylostola*, not taking into consideration the opinion of Nye. In the present paper we accept the argumentation of Nye and treat *indistincta* as type species of the genus.
Interestingly, the holotype female specimen bears a label with the handwriting of Hampson "Raparna | olivata | type ♀. Hmpsn"; the moth and the label are illustrated by De Prins & De Prins (2024, https://www.afromoths.net/species/48307), indicating that Hampson placed his new species first into the genus *Raparna* Moore, 1882 and (in fact, correctly) changed his opinion about the closer relationship of *olivata*. Possibly, his two milestone works, the 9th volume of the Catalogue and the Lepidoptera Heterocera in the Ruwenzori Expedition Reports were prepared contemporarily, and the latter was published earlier than the Catalogue with the formal designation of the type species of *Xylostola*.
In a taxonomic point of view, the eastern Asiatic and the African species of *Xylostola* represent two distinct lineages which can be possibly interpreted as two subgenera. The male clasping apparatus of the Asiatic species is almost entirely symmetrical (see Figs 25-26, 28-32) and the juxta is partly heavily sclerotised. In the African *X. punctum* (Fig. 35) the valvae are remarkably asymmetrical, having differently sized and shaped saccular processes and harpe-ampulla complexes and well-developed, sclerotised digituses (these asymmetrical organs are not developed in the Asiatic species, only somewhat stronger sclerotised plates can be found in the same area of the valvae), but the juxta is rather simple and less sclerotised.
As a revision of the genus is the target of a subsequent study, these two lineages are treated here as species groups within the common genus *Xylostola*.
It is worth to note that the genitalia of the two known Asiatic species show conspicuous differences in both sexes, despite their rather similar external appearance. The detailed characterisation of the copulatory organs is given in the Diagnosis chapters of *X. indistincta* and *X. jamesyoungi*.
The suprageneric relationships of the genus are also dubious; it is placed usually into the subfamily Xyleninae (as a part of the former Amphipyrinae in the wide sense), close to the tribe Sesamiini (see, e. g., Hampson, 1910; Holloway, 1989).

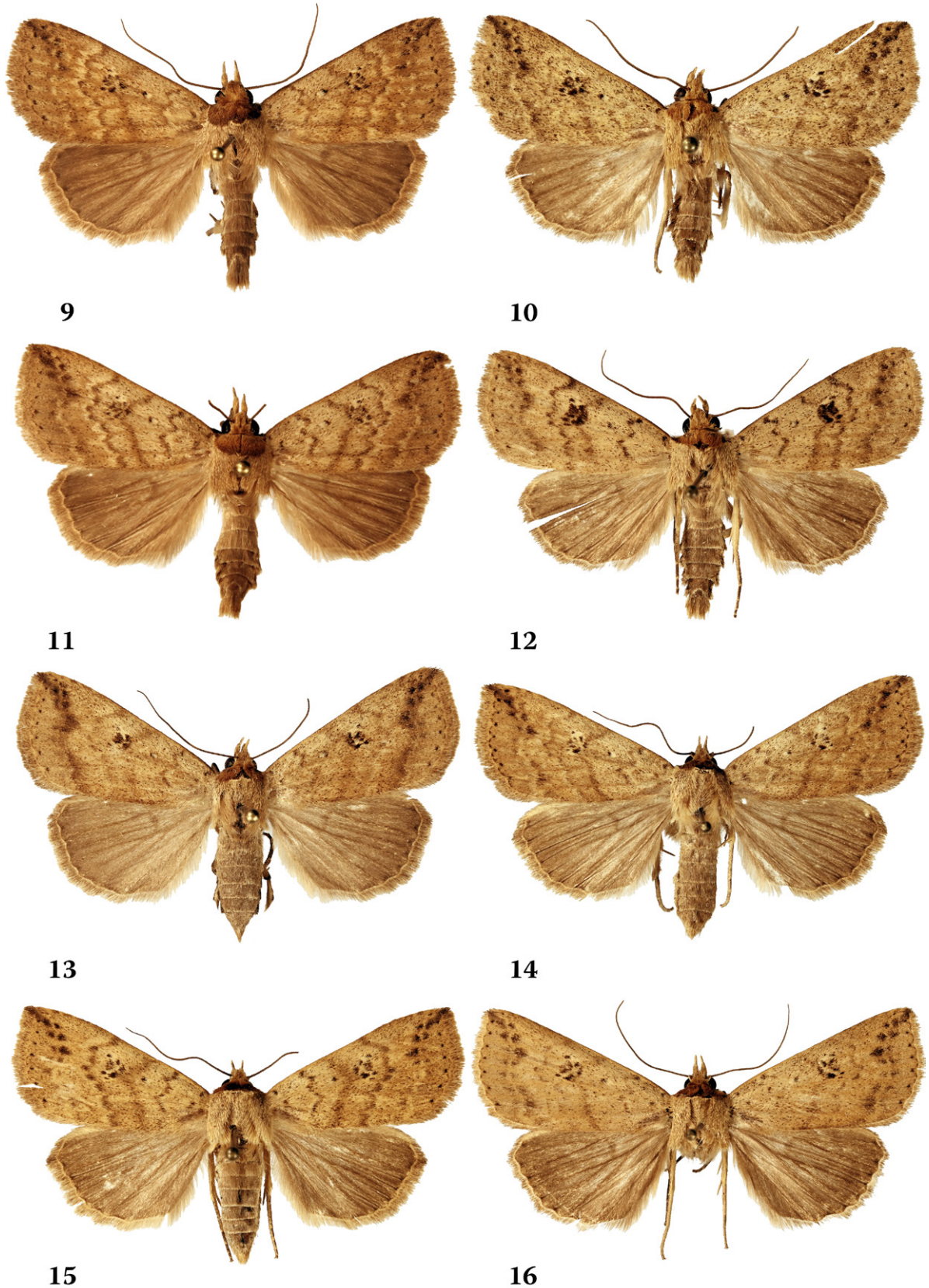
Xylostola indistincta (Moore, 1882)
Figs 1-8, 25-27

Vapara indistincta Moore, 1882: 163.

Type locality: [India, West Bengal] Darjeeling. Syntypes: in NHMUK and MFN; the male syntype preserved in NHMUK is designated here as lectotype.
Material examined: J. Plante collection, MHNG. India, West Bengal. 1 female, Tiger Hill, 2573 m, 30.IX.-5.X.1986, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71268; 1 male, Kurseong Forest, 1475 m, 7-22. IV.1988, *leg.* F. Aulombard, J. Martin & J. Plante, MHNG ENTO 71281. **Nepal.** 1 male, 6 km SW of Kalinchok peak, 3160 m, 86°E, 27°23'N, 6.VIII.1995, *leg.* Márton Hreblay & Tibor Csővári, MHNG ENTO 71288; 1 male, 2 females, Kathmandu valley, Phul Chowki, 2000-



Figs 1-8. *Xylostola indistincta* (Moore, 1882), habitus. (1-4) males, Nepal, Ganesh Himal. (5-8) females, Nepal, Ganesh Himal.



Figs 9-16. *Xylostola jamesyoungi* sp. nov., habitus. (9) ♂, holotype, Taiwan, Taichung County (wingspan 36 mm). (10-16) Paratypes. (10) ♂, Taiwan, Ilan County (wingspan 35 mm). (11) ♂, Taiwan, Taichung County (wingspan 34 mm). (12) ♂, Taiwan, Ilan County (wingspan 36 mm). (13) ♀, Taiwan, Taitung County (wingspan 38 mm). (14) ♀, Taiwan, Ilan County (wingspan 41 mm). (15) ♀, Taiwan, Hualien County (wingspan 39 mm). (16) ♀, Taiwan, Ilan County (wingspan 42 mm).

2500 m, 6-12.VI.1977, *leg.* J. Plante, MHNG ENTO 71289, 71290, 71291. **G. Ronkay collection, NHMW.**
Nepal. A large series of males and females from different parts of Central and Eastern Nepal. The data of the dissected specimens are as follows: 2 males, 2 females, Ganesh Himal, Nesukharka, 12 km S of Somdang, 2700 m, 28º08'N, 85º11'E, 20-21.V.1995, *leg.* Gy. Fábián & L. Ronkay, slide Nos KST1550m, KST1642m (males), KST1551f, KST1643f (females); 1 female, Ganesh Himal, near Godlang, 2520 m, 28º10'N, 85º17'E, 13.IX.1995, *leg.* B. Herczig & Gy.M. László, slide No. OP9022f; 1 male, Ganesh Himal, 2 km W of Gholjong, 2420 m, 28º11'N, 85º18'E, 12.IX.1995, *leg.* B. Herczig & Gy.M. László, slide No. OP9023m.

Diagnosis: Wingspan 35-42 mm. The species is very similar externally to the other three species (Figs 1-24) of the genus, with only slight differences in the forewing shape, colouration and elements of wing pattern. The type species (Figs 1-8) of the genus has, in comparison with *X. jamesyoungi* (Figs 9-22), a more elongated forewings with more pointed apex and finely concave outer margin below apex. The forewing ground colour is paler than in its sister species, with more ochreous from sand-brown to beige shade, and with more indistinct antemedial, medial and postmedial crosslines, the medial line is more diffuse and regularly paler than the postmedial line (an irregular female specimen is illustrated by Yoshimoto (1992: pl. 16, fig. 30) where the medial line is somewhat stronger than the postmedial line). Last but not least, the reniform stigma, although it has an obsolescent outline, is more elongated and narrower in *X. indistincta* than in *X. jamesyoungi*, and is defined by finer and less prominent black(ish) and brown dots. Another small difference between the two species is that the discal spot of the hindwing is always smaller and paler on both surfaces in *X. indistincta* than in *X. jamesyoungi*.

Male genitalia. The male clasping apparatus of *X. indistincta* (Figs 25, 26) differs conspicuously from that of *X. jamesyoungi* (Figs 28-30) by its remarkably shorter and broader, rather quadrangular valvae with large triangular medial costal lobe and apically more rounded cucullus, much stronger and thicker, plate-like and only slightly biforked harpe-ampulla complex, and the rather anvil-shaped juxta having densely spinose, medio-apically deeply incised dorsal section. The phallus of *X. indistincta* is longer and stronger sclerotised, distally more elongated than that of *X. jamesyoungi*, with a longer, beak-shaped and only subapically dentate ventral carinal process. The vesica of the two species are more similarly built than the other parts of the copulatory organ, the main difference between them can be found in the size of the cornuti field of the dorso-medial long diverticulum, which is much shorter in *X. indistincta* than in *X. jamesyoungi*.

Female genitalia. The basic configuration of the female copulatory organ is similar in the two Asiatic species of *Xylostola*, but the specific differences are prominent. The antrum of *X. indistincta* (Fig. 27) is much larger and more sclerotised than that of *X. jamesyoungi* (Figs 31, 32), more infundibular, the ductus bursae is broader and flattened, almost fully sclerotised, and the corpus bursae has only a narrow spinulose-scobinate zone in continuation of junction of ductus bursae to corpus bursae.

Distribution: Incompletely known. Confirmed records are from the eastern parts of the southern Himalayas (Nepal, NE India) where it may occur sympatrically with its sister species. The former data from Indochina, Central and south-eastern China, Taiwan, northern Malaysia and the western parts of the Sundaland refer to *X. jamesyoungi*, while the identity of the other populations is still questionable, their taxonomic clarification requires more detailed studies.

***Xylostola jamesyoungi* sp. nov.**

Figs 9-22, 28-34

Holotype: Male, Taiwan, Taichung County, Anmashan, Tashueshan Forest Recreation Area, 2200 m, 19.VI.1997, *leg.* B. Herczig & L. Ronkay (coll. G. Ronkay, NHMW).
Paratypes: G. Ronkay collection, **NHMW. Taiwan.** 6 males, 3 females, with same data as holotype; 1 male, 1 female, Taichung County, Anmashan, 1650 m, 20.VI.1997, *leg.* B. Herczig & L. Ronkay; 1 male, 3 females, Taitung County, Hsiangyang, upper forest zone, 2200 m, 13-14.VI.1997, *leg.* B. Herczig & L. Ronkay; 1 female, Yakou above Hsiangyang, 2700 m, 7.VII.1997, *leg.* B. Herczig & S.T. Kovács; 1 male, Anmashan Mts, Tashueshan, 2200 m. 19.VI.1997, *leg.* B. Herczig & L. Ronkay; 2 females, Ilan County, Fu-Shan Nature Conservation Area, 700-900 m, 27-28.III.1997, *leg.* G. Csorba & L. Ronkay; 2 males, 3 females, Ming Chyr Forest Recreation Area, 1200 m, 30-31.III.1997, *leg.* G. Csorba & L. Ronkay; 3 males, 1 female, Suyuan near Pinan at the road 7/1, 1500 m, 6.VI.1997, *leg.* B. Herczig & L. Ronkay; 1 male, 1 female, Ming Chyr, Forest Recreation Area, 1160 m, 8.V.1997, *leg.* Gy.M. László & G. László; 1 female, same locality, 4-5.VI.1997, *leg.* B. Herczig & L. Ronkay; 1 female, Hualien County, Taroko N.P., Kuanyuan, 2400 m, 4.IV.1997, *leg.* G. Csorba & L. Ronkay; 1 male, Nantou County, Hohuan Mts, Experimental Station, 3100 m, 26-28.IX.1999, *leg.* G. Csorba & B. Herczig; 2 males, 2 females, Hohuachi, 1950 m, 24º13'N, 121º16'E, 31.III.2000, *leg.* A. Kun & L. Peregovits; 4 males, 5 females, Hohuan Pass, 3000 m, 12.VII.1996, *leg.* G. Csorba & L. Németh; 2 females, Tayuling, 2550 m, 7-8.X.1996, *leg.* Gy. Fábián & F. Nemes; 1 female, Hohuan Mts, 2750 m, 5 km, SW Hohuan Mts, at road No 14, 8.VIII.1999, *leg.* E. Juhász & A. Kun; 1 female, Hohuan Pass, 5 km N Shihmen, 3000 m, 12.VII.1996, leg. G. Csorba & L. Németh; 1 male, Taipei County, Pihu, 410 m, 26.III.1997, leg. G.

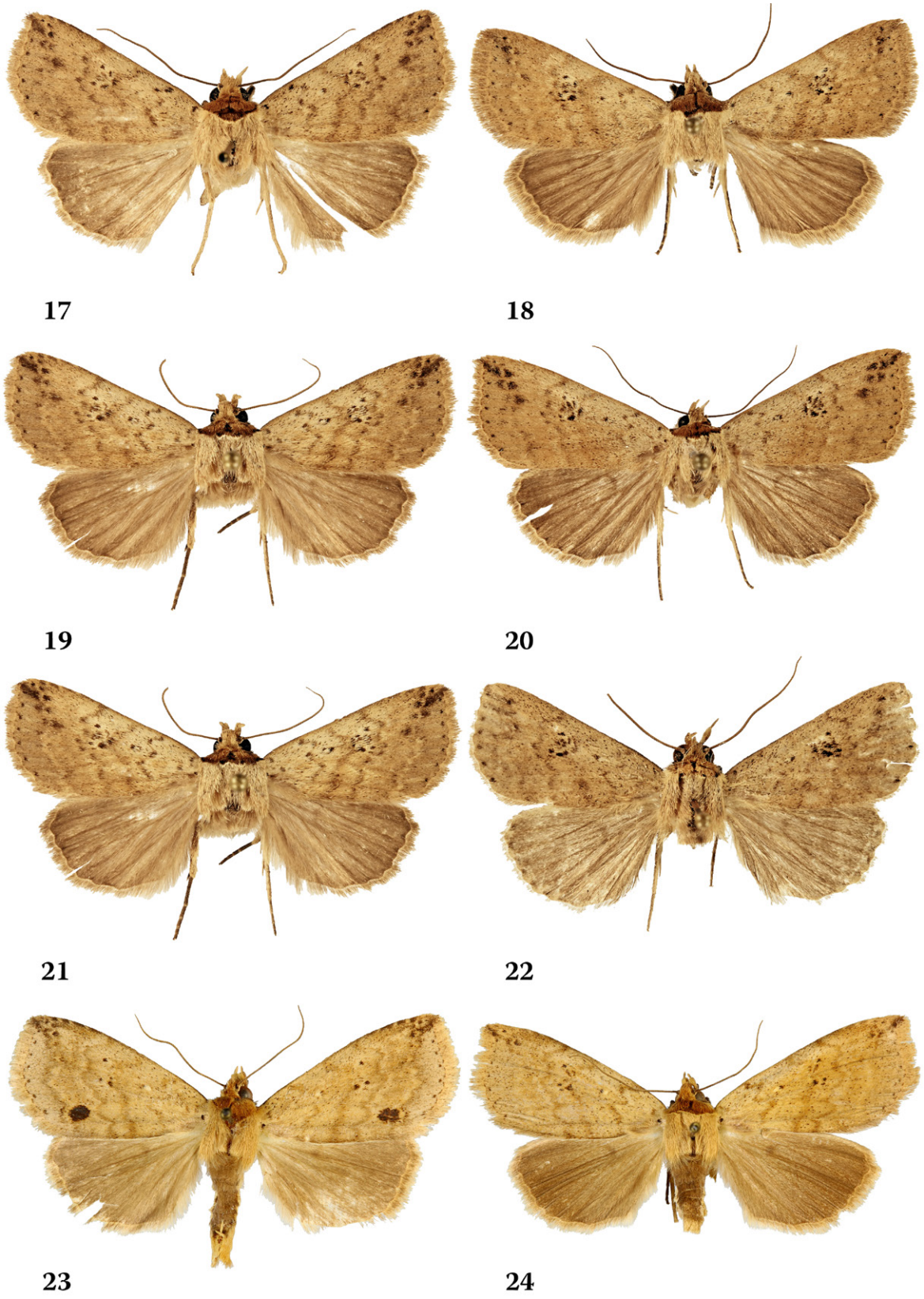
Csorba & L. Ronkay; 1 male, 1 female, Taipingshan N.R., 1300 m, 12.VII.1997, *leg.* B. Herczig & Y.Y. Lien; 1 female, Taiwan, Taitung County, 5 km W of Chihpen, 350 m, 9.III.1996, *leg.* Gy. Fábián & L. Németh. **Vietnam.** 1 female, Prov. Lao Cai, Sa Pa, 1300 m, 15-20. XI.1993, *leg.* A. Bankovics & G. Csorba; 1 female, Fan-si-pan Mts, 7 km W of Sa Pa, 2650 m, 103º22'18"E, 22º18'N, 1-2.II.1999, *leg.* L. Peregovits & G. Ronkay; 1 male, Fan-si-pan Mts, 14 km NW of Sa Pa, 1900-2000 m, 103º46'06"E, 22º20'9"N, 26-29.I.1999, *leg.* L. Peregovits & G. Ronkay. **Malaysia.** 1 male, Pahang state, Cameron Highlands, Tanah Rata, 21.III.-2.IV.1995, *leg.* G. Csorba. **Thailand.** 1 male, Prov. Chiang Mai, Doi Phahompok, 20 km NW of Fang, 2150 m, 28-29.I.2004, *leg.* A. Szabó; 1 male, same locality, 22-25.I.2004, A. Szabó. **Nepal.** 1 male, Koshi, Terhathum area, Chitre 2500 m, 87º24'E, 27º05'N, 22.III.1996, *leg.* G. Csorba & L. Ronkay. **China.** 1 female, Shaanxi, Tsinling, Foping N.R., 1600 m, 20.IV-11.V.1999, *leg.* Siniaev & Plutenko.

Gy. Fábián collection (Budapest, Hungary). Taiwan. 7 females, Nantou County, Yushan N.P., 3 km s of Hoshe, 1400 m, 8.VII.1996, *leg.* G. Csorba & Gy. Fábián; 2 males, Hualien County, Kuanyuan, 2380 m, 27.X.1996, *leg.* Gy. Fábián & F. Nemes; 1 female, Taichung County, Anmashan, Hooping, 2000 m, 31.X.1996, *leg.* Gy. Fábián & F. Nemes; 1 male, 1 female, Ilan County, 5 km SW of Ilan, 290 m, 25.II.1996, *leg.* Gy. Fábián & L. Németh; 1 male, 1 female, Ming Chyr, Forest Recreation Area, 1160 m, 27-28.XI.1998, *leg.* Gy. Fábián & Z. Korsós; 1 female, Taitung County, 2 km E of Hsiangyang, 2200 m, *leg.* G. Csorba & L. Németh; 1 male, 2 km N of Liyusan, 1760 m, 23.X.1996, *leg.* Gy. Fábián & F. Nemes; 1 female, 5 km W of Chihpen. 350 m, 9.III.1996, *leg.* Gy. Fábián & L. Németh.

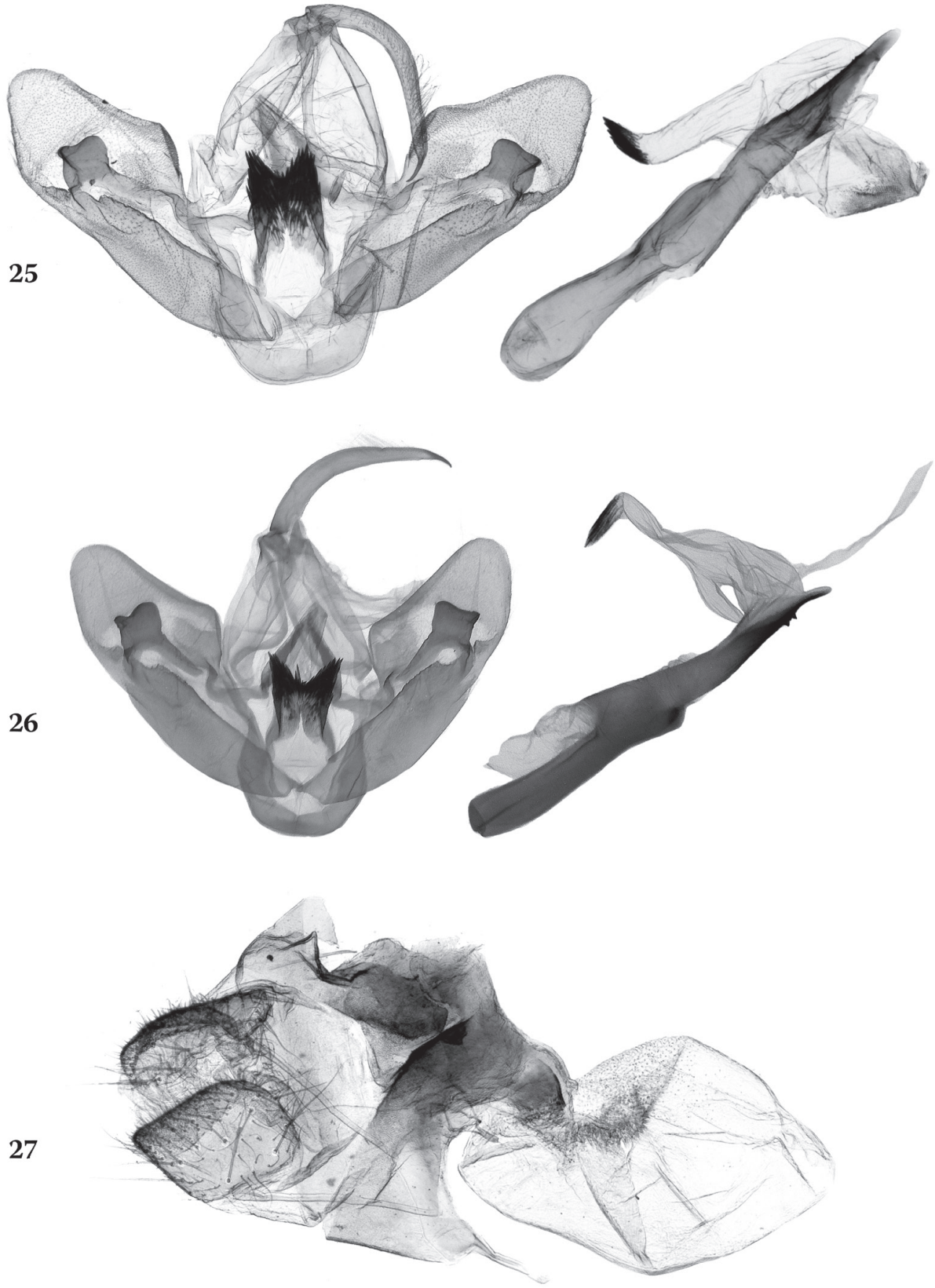
C.M. Fu collection (Taiping, Taiwan). Taiwan. 2 females, Taichung County, Taichung City, Anmashan, 2100 m, 1.II.1997, *leg.* C.M. Fu; 1 male, 2 females, Taichung City, Anmashan, 2350 m, 9. III.1996, *leg.* C.M. Fu; 1 female, Kaohsiung City, Zhongzhiguan, 1930 m, 7.XII.2015, *leg.* C.M. Fu & W.H. Cheng; 1 female, same locality, 9.XII.2015, *leg.* C. M. Fu & W.H. Cheng; 1 female, same locality, 11.I.2016, *leg.* C.M. Fu & W.H. Cheng; 1 female, Kaohsiung City, Tianchi, 2280 m, 9.XI.2015, *leg.* C.M. Fu & W.H. Cheng.

S.T. Kovács collection, SMNS (all *leg.* S.T. Kovács)**. Taiwan.** 1 specimen, Nantou County, 5 km W of Lu-Shan hot spring, 19.IV.1997; 2 specimens, Taipei, 10 km SE of Pinglin: Pi Hu, 400 m, 6.IV.1997; 4 specimens, Taoyuan County, Ming Chyr Forest Recreation Area, 1160 m, 24-26.VI.1997; 2 specimens, same locality, 1180 m, 17-18.IV.1997; 3 specimens, same locality, 8-9. VII.1997; 1 specimen, Prov. Nantou County, Tayuling, 2750 m, 28.VI.1997; 2 specimens, Tungpu, Yu-Shan nat. Park, 1400 m, 2-25.IV.1997; 17 specimens, Taichung County Anmashan, Hooping, 2000 m, 1-2.V.1997; 2 specimens, Chiai County, Suyuang, 880 m, 27.VII.1997; 2 specimens, Pingtung County, 10 km SE of Mutan, 470 m, 26.IV.1997; 1 specimen, 5 km W of Chihpen, 470 m, 27-28.IV.1997; 2 specimens, Taitung County Yu-Shan, Yakou, 2000 m, 29-30.IV.1997; 1 specimen, Hualien County, Hsipao, 980 m, 20.IV.1997.

NMNS. Taiwan. 1 male, Ilan County, Dongao, 278 m, 30.I.2019, *leg.* L. C. Shih; 1 female, Nanao, 245 m, 21.II.2013, *leg.* L.C. Shih; 1 male, same locality, 2.XII.2013, *leg.* L.C. Shih; 1 male, same locality, 12.II.2015, *leg.* L.C. Shih; 1 male, same locality, 6.X.2020, *leg.* L. C. Shih; 1 female, Dongao, 168 m, 26.II.2013, *leg.* L.C. Shih; 1 female, Dongao, 278 m, 30.I.2019, *leg.* L. C. Shih; 1 male, Nanao, Zhaoyang National Footpath, 51 m, 10.XII.2015, leg. L.C. Shih; 1 male, same locality, 27.IV.2017, leg. L.C. Shih; 1 female, Hsinchu County, Lidongshan, 1515 m, 8.I.2022, *leg.* W.C. Liao; 1 female, same locality, 6.VIII.2022, *leg.* W.C. Liao; 1 female, same locality, 15.IV.2023, *leg.* W.C. Liao; 1 female, same locality, 17.VI.2023, *leg.* W.C. Liao; 1 male, 1 female, same locality, 15.VII.2023, *leg.* W.C. Liao; 1 female, Miaoli County, Taian Hot Spring, 576 m, 18.X.2017, *leg.* L.C. Shih; 1 female, Taichung County, Taichung City, Wushikeng, 1000 m, 21.III.2012, *leg.* L.C. Shih; 1 female, same locality, 21.IX.2018, *leg.* L.C. Shih; 1 male, same locality, 14.VIII.2020, *leg.* L.C. Shih; 2 females, Daxue Shan, 2287 m, 30.V.2014, *leg.* S.H. Du; 1 male, same locality, 16.VIII.2014, *leg.* S.H. Du; 1 male, Malunshan, 1058 m, 9.IX.2023, *leg.* X.G. Chen; 1 female, Fengyuan, Gonglaoping, 506 m, 13.IV.2013, *leg.* M.N. Chen; 1 female, same locality, 1.III.2014, *leg.* M.N. Chen; 1 female, Fengyuan, Qingrengu, 390 m, 12.IV.2013, *leg.* M.N. Chen; 1 female, same locality, 21.II.2014, *leg.* M.N. Chen; 1 female, Wufeng, Qingtonglin, 312 m, 3.III.2014, *leg.* S.W. Yang; 1 female, same locality, 3.III.2014, *leg.* S.W. Yang; 1 female, Nantou County, Ruiyanxi Station, 2184 m, 21.V.2018, *leg.* C.H. Wang; 1 male, 2 females, same locality, 7.I.2019, *leg.* C.H. Wang; 1 male, Meifeng, 2140 m, 31.VI.2019, *leg.* L.C. Shih; 1 male, Yunlongqiao, 1120 m, 4.VI.2019, *leg.* L. C. Shih; 1 female, same locality, 15.I.2020, *leg.* L.C. Shih; 1 male, Puli, Lingxiao Temple, 1307 m, 3.III.2017, *leg.* W.C. Liao; 1 female, same locality, 6.X.2019, *leg.* W.C. Liao; 1 male, same locality, 10.III.2019, *leg.* W.C. Liao; 1 female, Jiantai Forest Trail, 1112 m, 26.II.2018, *leg.* L.C. Shih; 1 female, same locality, 25.XII.2018, *leg.* L.C. Shih; 1 female, same locality, 25.III.2019, *leg.* L.C. Shih; 1 male, same locality, 5.IX.2019, *leg.* L.C. Shih; 1 female, Lianhuachi, 721 m, 22.II.2020, *leg.* X.E. Cai; 1 female, same locality, 25.IV.2020, *leg.* X.E. Cai; 1 female, same locality, 12.XII.2020, *leg.* X.E. Cai; 1 male, 1 female, Zhongliao, Siyuan Villa, 1150 m, 23.VIII.2022, *leg.* W. C. Liao; 1 female, Sun Moon Lake, 821 m, 5.IX.2020, *leg.* L. C. Shih; 1 female, Jiji, Dashan Ln. 10.5 km, 1101 m, 2.VI.2018, *leg.* X.E. Cai; 1 male, same locality, 4.VIII.2018, *leg.* X.E. Cai; 1 female, same locality, 9.III.2019, *leg.* X.E. Cai; 1 female,



Figs 17-24. *Xylostola* species, habitus. (17-22) *Xylostola jamesyoungi* sp. nov. (17-22) Paratypes. (17) ♂, Nepal, Kanchenjunga Himal (wingspan 34 mm). (18). ♂, Thailand, Chiang Mai (wingspan 35 mm). (19) ♂, Vietnam, Lao Cai (wingspan 35 mm). (20) ♀, Vietnam, Lao Cai (wingspan 33 mm). (21) ♀, Vietnam, Lao Cai (wingspan 38 mm). (22) ♂, Malaysia, Cameron Highlands (wingspan 32 mm). (23-24) *Xylostola punctum* Berio, 1956. (23) ♂, holotype, Madagascar (wingspan 43 mm). (24). ♀, paratype ("allotype"), Madagascar (wingspan 44 mm).



Figs 25-27. *Xylostola indistincta* (Moore, 1882), genitalia. (25) male, OP9023m, Nepal, Ganesh Himal. (26) male, KST1550m, Nepal, Ganesh Himal. (27) female, KST1643f, Nepal, Ganesh Himal.

same locality, 7.IX.2019, *leg.* X.E. Cai; 1 female, same locality, 12.XII.2020, *leg.* X.E. Cai; 1 male, 2 female, Shanlinxi, 1721 m, 9.IV.2013, *leg.* R.C. Chen; 1 male, 1 female, same locality, 6.VI.2013, *leg.* R.C. Chen; 1 female, same locality, 3.III.2014, *leg.* R.C. Chen; 1 male, 2 females, Renlun Station, 1525 m, 28.IV.2013, *leg.* T.Y. Hsieh; 1 female, Wangxiang Station, 2300 m, 13.IV.2014, *leg.* T.Y. Hsieh; 1 male, same locality, 9.VIII.2014, *leg.* T.Y. Hsieh; 1 female, Tatajia, 2530 m, 16.V.2021, *leg.* C.B. Hsieh; 1 male, Lulin Lodge, 2720 m, 18.X.2020, *leg.* C.B. Hsieh; 1 male, Hualien County, Heping Forest Trail, 549 m, 8.III.2016, *leg*. L.C. Shih; 1 female, same locality, 31.V.2016, *leg.* L.C. Shih; 1 male, same locality, 21.II.2017, *leg.* L.C. Shih; 1 male, 1 female, Xibao Elementary School, 950 m, 25.VI.2009, *leg.* L.C. Shih; 1 male, 1 female, Xinbaiyang, 1644 m, 13.III.2010, *leg.* L.C. Shih; 1 male, same locality, 15.V.2010, *leg.* L.C. Shih; 1 female, Yunlin County, Gukeng, Qipan, 296 m, 13.IV.2013, *leg.* G.D. Chang; 4 females, same locality, 28.III.2014, *leg.* G.D. Chang; 1 male, same locality, 20.XII.2014, *leg.* G.D. Chang; 1 female, Hushan Reservoir, 161 m, 18.IV.2015, *leg.* G.D. Chang; 1 female, Chiayi County, Alishan, Shipangu, 1020 m, 23.I.2022, *leg.* W.C. Liao; 4 males, Fengshan, Gushan Temple, 744 m, 17.XII.2022, *leg.* W.C. Liao; 1 male, Fenqihu Station, 1345 m, 23.V.2020, *leg.* W.C. Liao; 1 female, same locality, 6.VI.2020, *leg.* W.C. Liao; 1 female, same locality, 22.VIII.2020, *leg.* W.C. Liao; 1 female, same locality, 14.XI.2020, *leg.* W.C. Liao; 1 female, Tainan City, Nanxi, Fanbaojianshan, 890 m, 14.VII.2018, *leg.* W.C. Liao; 1 female, same locality, 1.VI.2019, *leg.* W.C. Liao; 1 male, Kaohsiung City, Zhongzhiguan, 1900 m, 12.V.2015, *leg.* L.C. Shih; 1 male, same locality, 5.VII.2016, *leg.* L.C. Shih; 1 female, Tianchi, 2082 m, 25.IV.2016, *leg.* H.H. Lin; 1 female, Tengzhi Forest Road 17 km, 1427 m, 8.III.2014, *leg.* C.H. Wang; 1 female, Pingtung County, Majia, Red Quinoa Demonstration Farm, 743 m, 6.III.2021, *leg.* W.C. Liao; 1 female, same locality, 10.IV.2021, *leg.* W.C. Liao; 1 female, same locality, 4.IX.2021, *leg.* W.C. Liao; Taitung County, 1 male, Taimali, 843 m, 14.VI.2016, *leg.* L.C. Shih.

NEFU collection. China. 2 males, 2 females, Xizang, Motuo, Deergong, 26.V.-4.VI.2021, *leg.* H.L. Han; 1 female, Yunnan, Puer, 14.VI.2007, *leg.* H.L. Han; 1 female, Wuding, Chadian Town, 21.V.2022, *leg.* J. Wu & B. Gao; 1 female, Fawo Township, 20.V.2022, *leg.* B. Gao; 1 female, Dali, Binchuan County, Zhoucheng Town, 2.VI.2022, *leg.* J. Wu & B. Gao; 1 female, Jianchuan, Madeng Town, 31.V.2022, *leg.* J.J. Fan; 1 female, Nanjian, Leqiu Township, Leqiuxian, 29.V.2022, *leg.* H.L. Han & R.T. Xu; 1 female, Kunming, Xishan Forest Farm, 21.VI.2022, *leg.* W.Y. Liu *et al*. **Taiwan.** 1 female, Nantou County, Lia-Hwa-Chi, 690 m, 4.VII.1996, *leg.* K.T. Park & J.S. Lee.

D. Nilsson collection (Kalvehave, Denmark). China. 14 males, 1 female, Prov. West Yunnan, Baiyunshan, 2600 m, Yunlong County, end of II-early III.2008, *leg.* Yi *et al.*; 1 female, Prov. Sichuan, road from Dechang to Miyi, 2200 m, 27º05'40''N, 02º01'25"E, 29.III.2011, *leg.* Floriani & Saldaitis; 1 female, Qingcheng Hou Shan Mts, 70 km NW of Chengdu 1500 m, 2-7.XI.2006, *leg.* S. Murzin; 1 male, same locality, 27.X-1.XI.2006, *leg.* S. Murzin; 1 female, same locality, 21-30.XI.2006, *leg.* S. Murzin. **West Myanmar.** 1 male, Chin State, road Mindat-Matupi, 25 miles camp, 21º26'280"N, E93º47'224"E, 2318 m, 12-13.XI.2015, *leg.* Loeffler & Naumann. **Vietnam.** 1 female, Prov. Kon Tum, Ngoc Linh Mts, 1700 m, II.2017, *leg.* L.L. Thanh. **West Bhutan.** 1 male, Timpu district, 1,5 km NE of Dochu La, 27º29'46"N, 89º45'48"E, 2820 m 10.VI.2007, *leg.* P. Kautt & Naumann; 1 female, Paro district, Do Chu-valley, 4 km NNE of Paro, 27º27'38"N, 89º25'47"E, 2370 m. 9.VI. 2007, *leg.* P. Kautt & Naumann. **Central Bhutan.** 1 male, Wangdue Phodrang district, road Chuzomsa, 27º33'18"N, 90º02'14"E, 2000 m, 20.VI.2007, *leg.* P. Kautt & Naumann.

J. Plante collection, MHNG. Taiwan. 1 specimen, Nantou County, Mushe, 6.VIII.1969, *leg.* K. Ishizuka, MHNG ENTO 71265; 2 specimens, Taichung County, Lishan, 2020 m, 23-30.IX.1992, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71267, 71282; 1 specimen, Huisun forest, 570-800 m, 28-29.IX.1992, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71287; 2 specimens, Lishan, 2000 m, 17.VI.1993, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71282, 71284; 1 specimen, Hualien County, road to Hohuanshan, 3000 m, 21.VI1.1993, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71285; 1 specimen, 30 km SE of Lishan, 2650 m, 25.IX.1992, *leg.* F. Aulombard & J. Plante, MHNG ENTO 71286. **Thailand.** 6 specimens, Prov. Chiang Mai, Doi Phahompok, 16 km NW of Fang, 2000 m, 15.II.1998, *leg.* M. Hreblay & Cs. Szabóky, MHNG ENTO 71269, 71272, 71273, 71294, 71295, 71296; 10 specimens, 23 km NW of Sop Kha, 1 km E of Kop Dong, 1650 m, 13.II.1998, *leg.* M. Hreblay & Cs. Szabóky, MHNG ENTO 71270, 71271, 71274, 71275, 71276, 71277, 71279, 71280, 71298, 71302; 1 specimen, same locality, but 23.II.1998, *leg.* M. Hreblay & Cs. Szabóky, MHNG ENTO 71293; 6 specimens, 20 km NW of Fang, 1725 m, 14.II.1998, *leg.* M. Hreblay & Cs. Szabóky, MHNG ENTO 71278, 71292, 71297, 71299, 71300, 71301; 1 specimen, Prov. Nan, 25 km N of Bo Luang, 1150 m, 19.II.1998, *leg.* M. Hreblay & Cs. Szabóky, MHNG ENTO 71303.

TBRI collection. Taiwan. 2 females, Nantou Co., Xiaofengkou, 3002 m, 7.VII.2008, *leg.* H. H. Lin.

TFRI collection. Taiwan. 1 male, Nantou Co., Lianhuachi, 700 m, 18.XI.2012, *leg.* S. Wu & W. C. Chang; 1 female, Chiayi Co., Shanmei, 800 m, 6.X.2011, *leg.* S. Wu & W. C. Chang.

H.R. Tso collection (Puli, Taiwan). Taiwan. 1 male, Taichung County, Anmashan, 2100 m, 4.I.1997, *leg.* H.R. Tzuoo.

Slide Nos: Nepal, Kanchenjunga Himal: KST1644m (male). Thailand: KST1647m (male). Vietnam: KST1554m (male), KST1555f, KST1648f (females). Malaysia: KST1556m (male). China, Shaanxi: HHL7079, HHL7081 (males), HHL7078, HHL7080, HHL7082, HHL7083, HHL7084, HHL7085, HHL7086, HHL7087, HHL7088, HHL7089, RL13765f (females). Taiwan: KST1552m, KST1645m, OP9024m, TFRI149481 (males), KST1553f, KST1646f, OP9025f, TFRI157755 (females).

Diagnosis: Wingspan 31-43 mm. The new species (Figs 9-22) differs externally from *X. indistincta* (Figs 1-8) by its somewhat broader and apically less pointed forewings having more evenly arched outer margin below apex, most often darker, more brownish or red-brownish shaded ground colour with stronger brown irroration and sharper defined brown to blackish noctuid pattern. All four crosslines are usually well-marked, the median fascia is almost always as strong as (or sometimes even stronger than the) postmedial line. The reniform stigma is characteristically broad and rounded, with more densely dark suffused centre, it is remarkably larger and darker than in the other three congeners, even in case of the diffusely marked, pale specimens (see Figs 9-22, comparing with Figs 1-8 and 23-24). The hindwings of *X. jamesyoungi* are usually darker brown coloured than those of *X. indistincta* and the discal spot is on average stronger on both surfaces.

Male genitalia. The differences in the male genitalia of the two Asiatic species are surprisingly large, regarding their strong external resemblance. The clasping apparatus of *X. jamesyoungi* (Figs 28-30) has, in comparison with *X. indistincta* (Figs 25, 26), more elongated and medially narrower valvae with flattened and rounded medial costal lobe, basally much broader and finer, much more bifurcate harpe-ampulla complex, and the configuration of the juxta is quite dissimilar, composed from a smoothly sclerotised and rather U-shaped basal (dorsal) plate having arched and pointed medio-lateral process, and a huge, rather reversed U-shaped and finely inflated ventral section which is densely hairy-spinulose with fine short hairs and minute spinules. The phallus is straighter than that of *X. indistincta*, distally somewhat broader and less sclerotised, the beak-shaped ventral carina plate is weaker and densely covered with tiny denticles. The vesica of *X. jamesyoungi* is more ample than that of *X. indistincta* and the cornuti field of the dorso-medial long diverticulum is considerably larger, covering not only the apical but also the dorsal surface of the diverticulum.

Female genitalia. The main specific features of the female genitalia of the new species are the small, narrowly infundibular antrum, the thin and almost entirely membranous ductus bursae and the large posterior scobinate-spinulose area of the corpus bursae. The antrum of *X. jamesyoungi* (Figs 31, 32) is remarkably smaller than in *X. indistincta* (Fig. 27) and weaker sclerotised, and the ductus bursae is thinner and not flattened, lacking the smoothly sclerotised proximal plate which is typical of *X. indistincta*. The large scobinate-spinulose area of the corpus bursae is a striking feature of the new species, in comparison with the short and narrow stripe-like spinulose field of *X. indistincta* which is continued anteriorly in a small and weak-scobinate area laterally.

Distribution: *Xylostola jamesyoungi* is known to occur from the eastern parts of the southern Himalayas (eastern Nepal, Bhutan) throughout northern Indochina (Myanmar, Thailand, Vietnam), and Central and south-eastern China to Taiwan. The species illustrated by Holloway (1989; figs 374-376) under the name *X. indistincta* from Borneo and Java possesses the "*jamesyoungi*-type" of genitalia in both sexes; its possible occurrence in the Philippines is also supposed.

Etymology: The new species is named after Mr James John Young in recognition of his efforts in elucidating the early stages of Lepidoptera in Hong Kong and the neighbouring area.

Xylostola olivata Hampson, 1909

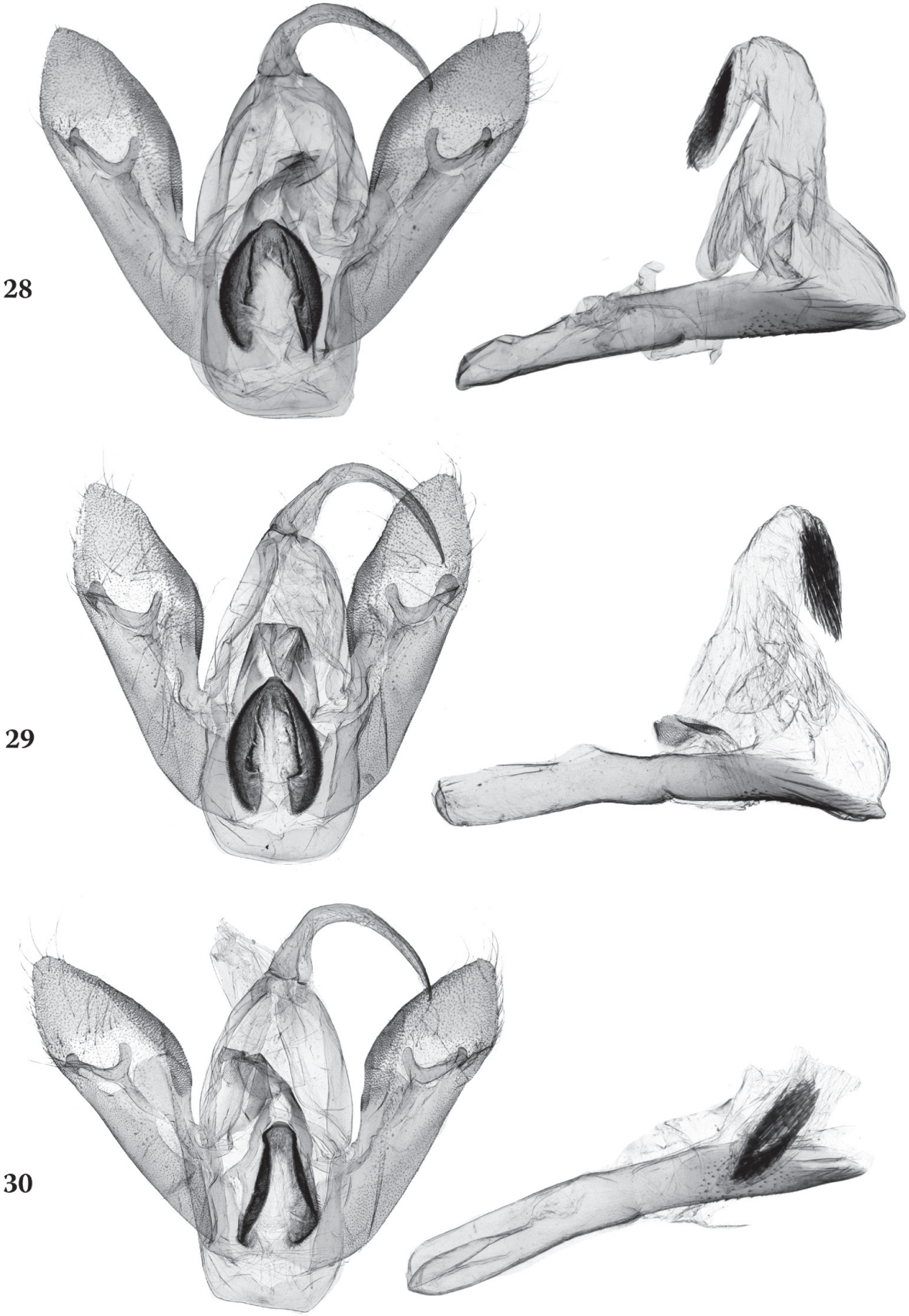
Xylostola olivata Hampson, 1909: 108, pl. 4, fig. 16.

Type locality: Uganda, E Ruwenzori, Mubuku valley. Holotype: female, in NHMUK.

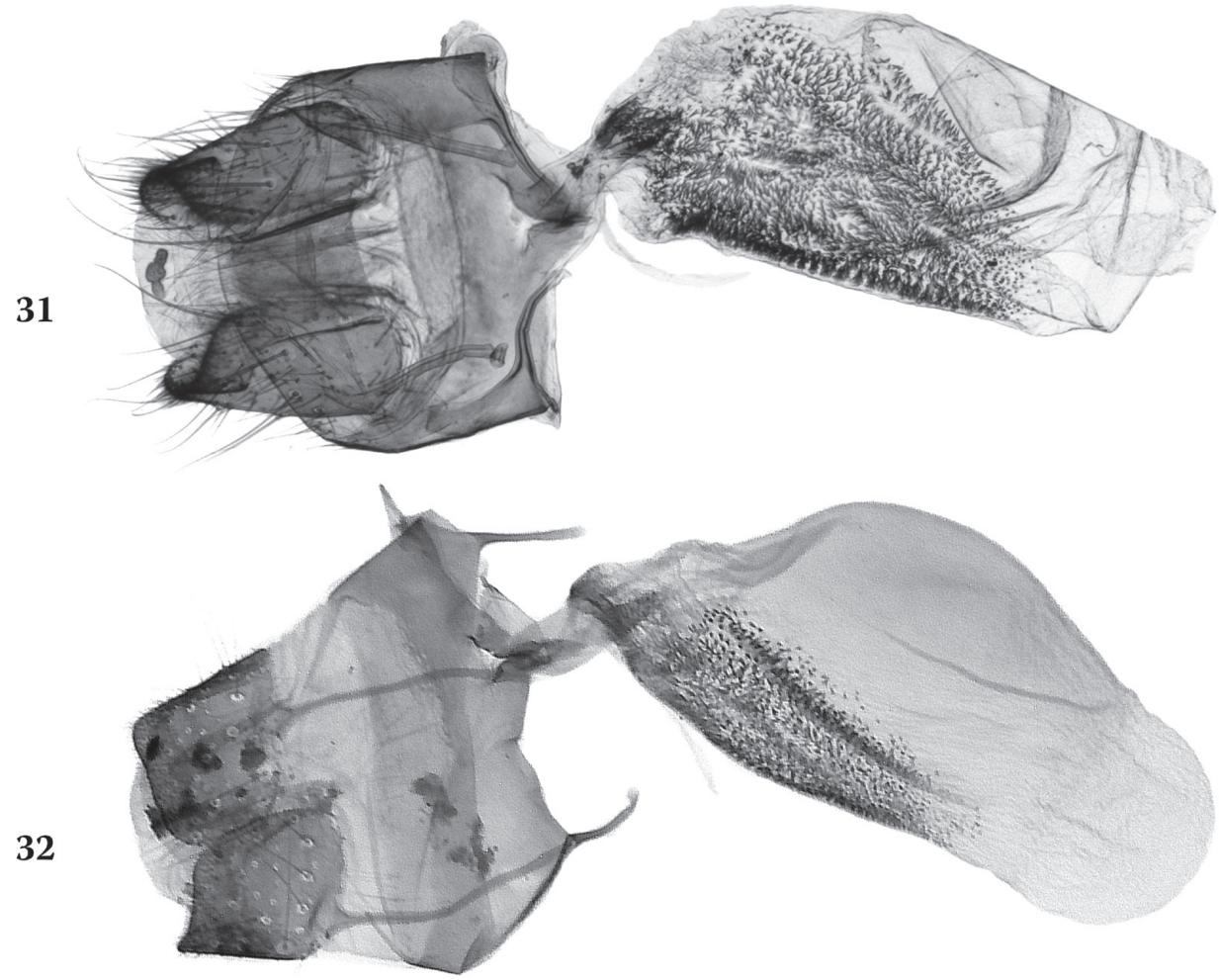
Type material examined: Holotype female, "Ruwenzori. | 6,000 ft. | 24.I.06. | 1906-153.", "Type" (red ring label); "Raparna | olivata | type ♀ Hmpsn "(with handwriting of Hampson) (NHMUK). Colour photos of the specimen and its labels were studied with the courtesy of Jurate and Willy de Prins; they are also presented on the Afromoths website (De Prins & De Prins, 2024, https://www.afromoths.net/species/48307).

Diagnosis: Wingspan 42 mm. The only studied specimen of the species differs from *X. punctum* (Figs 23, 24) by its somewhat broader forewings with finer apex and evenly arched outer margin (without smaller concavity below apex), more indistinct and less sinuous medial and postmedial crosslines and straighter subterminal line, and the hindwing more unicolorous and paler ochreous brown, with minute discal lunule only. The prominent black patch at the tornus is missing from the holotype of *X. olivata*; this phenomenon is observable, however, also in *X. punctum* (Fig. 24).

In the identification key of the genus *Xylostola*, Hampson (1910) mentioned the arch of the postmedial line as a feature distinguishing *X. olivata (*as "*olivacea*") from *X. indistincta*. Indeed, in the overwhelming majority of the specimens of *X. indistincta* and *X. jamesyoungi* has a small incurvation at the reniform stigma ("discal fold" *sensu* Hampson; there is only one exceptional specimen of *X. indistincta* (Fig. 4) which has an almost evenly



Figs 28-30. *Xylostola jamesyoungi* sp. nov., male genitalia. (28) paratype, KST1552m, Taiwan, Taitung County. (29) paratype, KST1647m, Thailand, Prov. Chiang Mai. (31) paratype, KST1644m, Nepal, Kanchenjunga Himal.



Figs 31-32. *Xylostola jamesyoungi* sp. nov., female genitalia. (31) paratype, KST1553f, Taiwan, Ilan County. (32) paratype, OP9025f, Taiwan, Taitung County.

arched postmedial line on the left forewing) while the postmedial line of the holotype of *X. olivata* is evenly arched from the subcellular vein to the subcostal vein. This feature would also distinguish *X. olivata* from *X. punctum* as the postmedial line of the latter species is also invaginated at the reniform stigma.

Distribution: Uganda. The species is known only from its type locality.

Remark: The name of the species is misspelled in the 9th volume of Hampson's Catalogue (Hampson, 1910: pp. 336, 337) as *X. olivacea*.

***Xylostola punctum* Berio, 1956**

Figs 23-24, 33-34

Xylostola punctum Berio, 1956: 124, fig. 15.

Type locality: Madagascar (Central), Ancaratra Massif, Manjakatompo, Ambahona forest. Holotype: male, in MNHN.

Type material examined: Holotype male, "HOLOTYPE" (red label), "Madagascar Centr. | Massif de l'Ankaratra | Manjakatompo | Forêt d'Ambahona | Alt. 1850 m - P. Viette | Chasse No. 123 du 19/5 1952", "MUSÉUM PARIS | Mission P. Viette | Sept 1951 - Mars 1952", "Xylostola | indistincta Moore | ou proche" (with the handwriting of Viette), "Xylostola | punctum | type ♂ Berio | DET. BERIO" (MNHN). Paratype female (labelled as "Allotype"), collected at the same locality, on 21.II.1952 (MNHN). The colour photos of the two specimens illustrated on Figs 23 and 24 were provided with courtesy by Jurate and Willy de Prins; they are also presented on the Afromoths website (De Prins & De Prins 2024, https://www.afromoths.net/species/48309).

Additional material examined: Madagascar. A photo of a female specimen presented by De Prins & De Prins (2024, https://www.afromoths.net/species/48309), with the data "Madagascar SE | Ranamofana NP | Sotam Lodge, 913m ü NN | S21°14,585' / E47°25,639' | 09-13.04.2018 LF | *leg.* R. Fiebig & D. Stadie" (det. A. Legrain).

Figs 33-34. *Xylostola punctum* Berio, 1956, genitalia. (33) male, Madagascar (from Viette, 1967, fig. 570). (34) female, Madagascar (from Viette, 1967, fig. 571).

Diagnosis: Wingspan 43-44 mm. The typical specimens of *X. punctum* (Fig. 23) are easily separable from all other congeners by the presence of a prominent blackish patch on the forewing tornal area between the postmedial and subterminal lines. This prominent black patch at tornus is missing, however, from the female paratype ("allotype") of *X. punctum* (Fig. 24). Additional differences between *X. punctum* and *X. olivata* can be found in the shape of the forewing, the shape of the crosslines and the colouration of the hindwing as *X. punctum* has somewhat better visible and remarkably more sinuous medial, postmedial and subterminal crosslines, and darker brown suffused hindwings with stronger dark discal lunule on the underside.

Male genitalia (Fig. 33). The male clasping apparatus of *X. punctum* differs essentially from those of the Asiatic congeners by the strongly asymmetrical valval organs (saccular processes, harpe-ampulla complexes and digituses) which are generally symmetrical in *X. indistincta* and *X. jamesyoungi* and the simplified, less sclerotised juxta; the vesica is armed by two small cornuti fields while the Asiatic species have only one larger brush of longer spinules.

Female genitalia (Fig. 34). The specific features of *X. punctum*, in comparison with *X. indistincta* and *X. jamesyoungi*, are the long and rather funnel-like sclerotised antrum and distal section of ductus bursae, the rather tubular posterior part of the corpus bursae, the absence of the smaller or larger spinulose-scobinate area and, on the contrary, the presence of a long, ribbon-like and two small, rounded signa which are missing from the Asiatic *Xylostola* species.

Distribution: The species is endemic to Madagascar.

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