



# On the taxonomy of the *Thalpophila* Hübner, 1820-*Olivenebula* Kishida and Yoshimoto 1977 generic complex (Lepidoptera, Noctuidae, Xyleninae)

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## Abstract

The supraspecific taxa of the *Thalpophila* generic complex are revised, a new genus *Dandirania* **gen. n.** and two new subgenera, *Confectania* **subgen. n.** and *Wallaceania* **subgen. n.** are described. The genus *Chlorothalpa* Beck, 1996 and its subgenus *Subthalpa* Beck, 1996 are reinstated from synonymy with *Olivenebula* Kishida and Yoshimoto, 1977. The western Palaearctic (European) species associated with *Olivenebula* are transferred to *Chlorothalpa* (**comb. rev.**). A new *Chlorothalpa* (*Subthalpa*) species, *C. vargazoli* **sp. n.**; a new *Olivenebula* species, *O. (O.) stanegomboci* **sp. n.** and a new subspecies *O. (O.) oberthueri thomasbaroni* **ssp. n.**; and two species and a new subspecies of *Dandirania*, *D. (W.) sramkogabori* **sp. n.**, *D. (W.) alfredrussellwallacei* **sp. n.** and *D. (D.) opulenta schreieri* **ssp. n.** are described. *Chlorothalpa* (*C.*) *graslini* (Culot, 1913), *Dandirania* (*D.*) *opulenta* (Butler, 1889) and *D. (W.) largeteaui* (Oberthür, 1881) are upgraded to species level (**stat. rev.**).

**Keywords** *Thalpophila* generic complex · Generic revision · New taxa · New combinations · Himalayan-Sino-Pacific region

## Abbreviations

MFN (formerly ZMHU)	Museum für Naturkunde, Berlin, Germany;
NHMUK (formerly BMNH)	The Natural History Museum, London, UK;
NHMW	Natural History Museum, Vienna, Austria;
MHNG	Museum d'Histoire Naturelle, Geneva;
OP	Genitalia slides prepared by Oleg Pekarsky;
RL	Genitalia slides prepared by László Ronkay

## Introduction

The supraspecific relegation of the *Thalpophila* generic complex has undergone fundamental changes during the last fifty years, in the former times all externally somewhat similar species were placed into the genera *Thalpophila* Hübner, 1820 and *Polyphaenis* Boisduval, 1840; all European species were placed into these two genera until the nineties of the last century. On the other hand, the eastern Asiatic species of the generic complex were considered either as *Polyphaenis* or described originally as *Epilecta* Hübner, 1821 or *Triphaena* Ochseneimer, 1816.

The first attempt to distinguish the major eastern Palaearctic lineages from each other was the description of the genus *Olivenebula* by Kishida and Yoshimoto (1977). Their statement was correct but they did not take into consideration the all Himalayan-Sino-Pacific lineages just only the two most easterly distributed members of this complex. The separation of *Olivenebula* from *Polyphaenis* and the association of *Polyphaenis oberthueri* Staudinger, 1892 with *Olivenebula* is generally accented by the subsequent authors (e.g. Sugi 1982; Kononenko 2005).

The recognition of the distinctness of "*Polyphaenis*" *xanthochloris* Boisduval, 1840 and *subsericata* Herrich-Schäffer, 1861 from the true *Polyphaenis* species is the

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merit of Beck (1996, 1999–2000) who stated that these two species belong to the *Thalpophila* clade and established two distinct subgenera, *Chlorothalpa* and *Subthalpa* within *Thalpophila* between them. He had not studied, however, the eastern Palaearctic lineages of the clade and underestimated the value of the differential morphological characters of the three western Palaearctic lineages.

The close relationship between the western and eastern groups of the generic complex was first published by Hacker (2001) who introduced the generic name *Olivenebula* for *subsericata* and synonymised *Chlorothalpa* with *Olivenebula*. Finally, Fibiger and Hacker (2007) synonymised also *Subthalpa* with *Olivenebula*.

The detailed study of all described taxa and their externally similar relatives proved that the above-mentioned concepts are only partly correct and require a comprehensive revision. The results of this revision are published below. In summary, no *Olivenebula* species occur in the western Palaearctic, the westernmost true *Olivenebula* species occur eastwards from the Tibetan plateau. The only close relative of *Olivenebula* in the western Palaearctic is *Thalpophila*; the two European species represent a distinct genus for which *Chlorothalpa* is reinstated. It is still questionable whether they are direct descendents of the newly described genus, *Dandirania*, or only one ancestral species of the generic complex arrived to western Asia and then evolved in two rather different ways. It can be stated that the two species represent two markedly different lineages; therefore, the two subgenera of "*Thalpophila*" can be used as two subgenera of a common but distinct genus. As the type species of *Chlorothalpa* was described earlier, this name was selected for the genus while *Subthalpa* is used as the name of its subgenus.

The revision resulted in, besides the separation of *Dandirania* from *Olivenebula*, the discovery of three new species and two new subspecies, and a number of other taxonomic changes in the taxonomic statuses. Our results clearly demonstrate the need of examination of all available taxa for a generic level revision and the establishment of new supraspecific taxa would require a thorough investigation of the character states of all known (recognised) taxa of a given clade/line.

## Material and methods

The genital apparatuses were dissected, stained with Eosin red and embedded in Euparal on microscope slides applying standard methods of preparation (Lafontaine and Mikkola 1987). Photographs of adults were taken using a Nikon D90 SLR camera equipped with Nikkor AF Micro 60 mm lens. The genitalia photographs have been taken using either a Nikon Eclipse 80i compound microscope connected to a Nikon DS-Fi1 digital camera by courtesy of Martin Lödl

and Sabine Gaal-Haszler in the NHMW, or a Moticam Pro S5 Lite camera by courtesy of Svitlana and Oleg Pekarsky (Budapest).

## Results

### Revised checklist of the *Thalpophila* generic complex

*Thalpophila* Hübner, 1820  
*matura* (Hufnagel, 1766)  
*matura* ssp. (the revision of the taxa of the *matura* complex is a target of another article)  
*vitalba* (Freyer, 1834)

*Chlorothalpa* Beck, 1996 **stat. rev.**  
 subgen. *Chlorothalpa* Beck, 1996  
*xanthochloris* (Boisduval, 1840)  
*graslini* (Culot, 1913) **stat. rev.**  
 subgen. *Subthalpa* Beck, 1996 **stat. rev., comb. n.**  
*subsericata* (Herrich-Schäffer, 1861) **comb. n.**  
*vargazoli* Ronkay and Ronkay **sp. n.**

*Olivenebula* Kishida and Yoshimoto, 1977  
 subgen. *Olivenebula* Kishida and Yoshimoto, 1977  
*oberthueri oberthueri* (Staudinger, 1892)  
*oberthueri thomasbaroni* Ronkay and Ronkay **ssp. n.**  
*monticola* Kishida and Yoshimoto, 1977  
 sp. from Taiwan close to *monticola* Kishida and Yoshimoto, 1977  
*stanegomboci* Ronkay and Ronkay **sp. n.**  
 subgen. *Confectania* Ronkay and Ronkay **subgen. n.**  
*confecta* (Walker, 1858)  
 (= *hyblaea* (Felder and Rogenhofer, 1874); *curtipalpis* (Butler, 1889))

*Dandirania* Ronkay, Ronkay and Landry **gen. n.**  
 subgen. *Dandirania* Ronkay, Ronkay and Landry **subgen. n.**  
*opulenta opulenta* (Butler, 1889) **stat. rev.**  
 (= *opulenta* (Butler, 1883))  
*opulenta schreieri* Ronkay and Ronkay **ssp. n.**  
*pulcherrima* (Moore, 1867)  
*sramkogabori* Ronkay and Ronkay **sp. n.**  
 subgen. *Wallaceania* Ronkay and Ronkay **subgen. n.**  
*largeteaui* (Oberthür, 1881) **stat. rev., comb. n.**  
*alfredrussellwallacei* Ronkay and Ronkay **sp. n.**

## Systematic part

Genus *Chlorothalpa* Beck, 1996, **stat. rev.**

(Figs. 1, 2b, 7b,c, 8a–c, 9a–c.

*Thalpophila* (*Chlorothalpa*) Beck, 1996, *Neue entomologische Nachrichten* **36**: 62. Type species: *Polyphaenis xanthochloris* Boisduval, 1840.

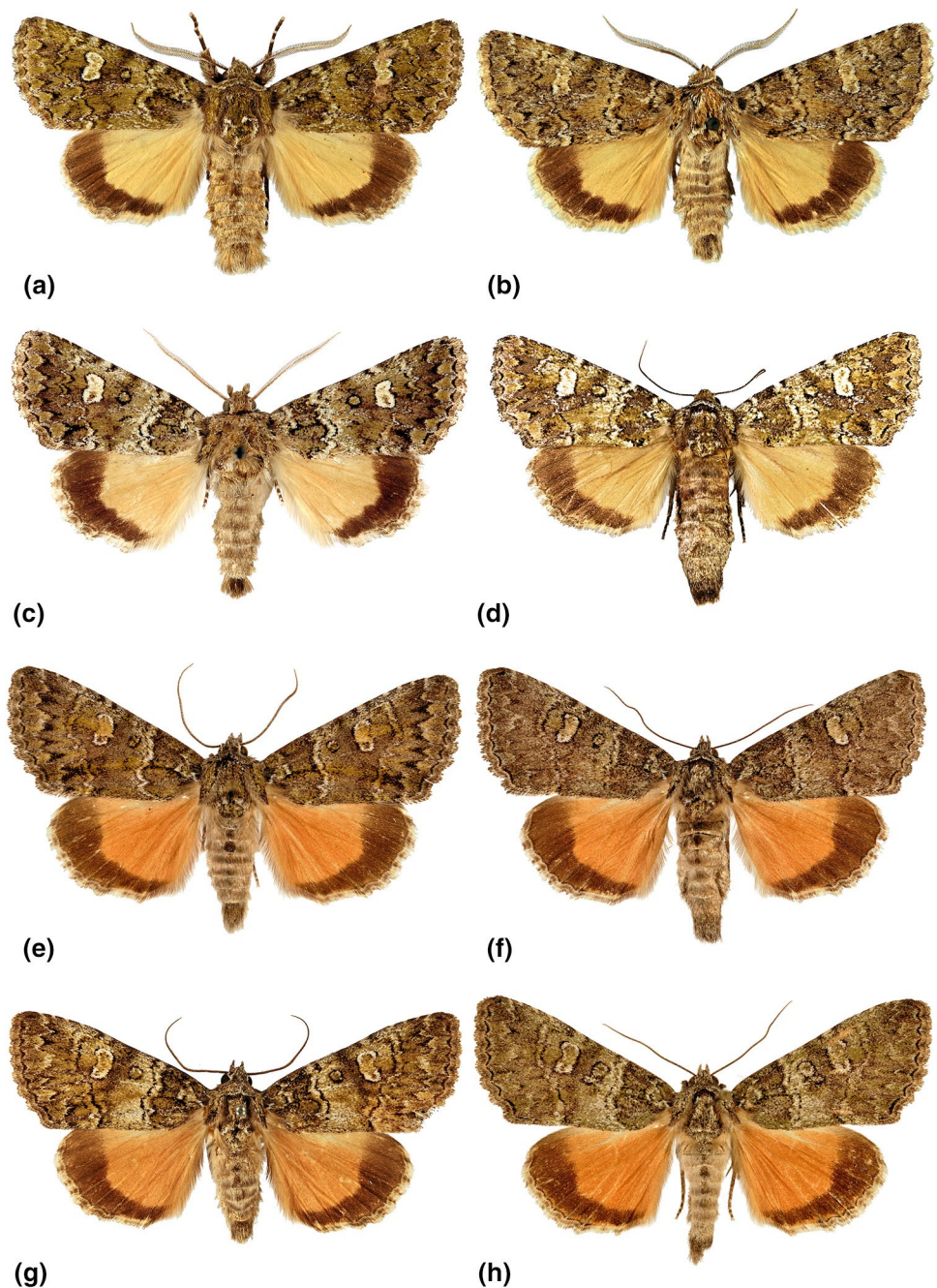
Taxonomy. The detailed comparison of *Thalpophila* and *Olivenebula* is given under the diagnosis of the latter

genus while the diagnostic characters separating *Chlorothalpa* from *Olivenebula* and *Thalpophila* are discussed below.

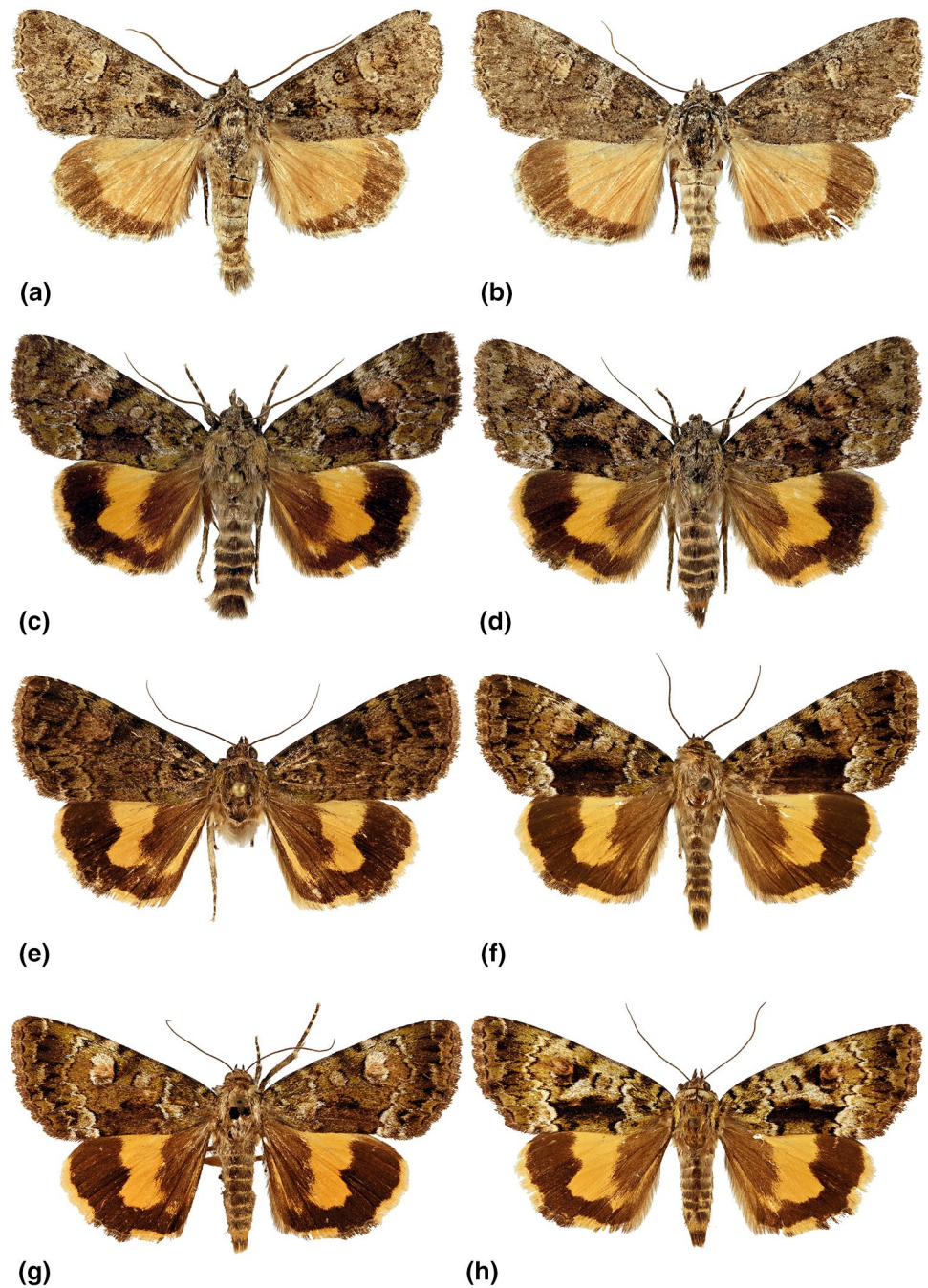
Diagnosis. The main external differences between *Chlorothalpa* and *Olivenebula* are the absence of the dark internal suffusion of the hindwing which is present in all known species of *Olivenebula* (and *Dandirania*), and the less prominent dark striolation of the dorsum of abdominal segments though the dark anal tuft is present in both genera.

The main features distinguishing the male genitalia of *Chlorothalpa* and *Olivenebula* are the simple uncus (it is

**Fig. 1** *Chlorothalpa* spp., adults. **a** *Ch. xanthochloris*, male, Italy, Sicily (wingspan 46 mm); **b** ditto, male, Italy, Sicily (wingspan 45 mm); **c** *Ch. graslini*, male, Spain, Albarra-cin (wingspan 46 mm); **d** ditto, female, Spain, Burgos (wing-span 48 mm); **e** *Ch. subsericata*, male, West Turkey (wingspan 48 mm); **e** ditto, female, West Turkey (wingspan 50 mm); **7** ditto, male, North Makedonia, Ochrid (wingspan 47 mm); **f** ditto, female, North Makedonia, Ochrid (wingspan 48 mm)



**Fig. 2** *Chlorothalpa* and *Olivenebula* spp., adults. **a** *Ch. vargazoli* sp. n., male, holotype, Iran, Kermanshah (wingspan 45 mm) **b** ditto, female, paratype, Iran, Kermanshah, (wingspan 51 mm) **c** *O. oberthueri oberthueri*, male, Russian Far East (wingspan 41 mm) **d** ditto, female, Russian Far East (wingspan 44 mm) **e**. *O. oberthueri thomasbaroni* ssp. n., male, holotype, China, Sichuan (wingspan 46 mm) **f** ditto, male, paratype, China, Sichuan (wingspan 44 mm) **g** ditto, female, paratype, China, Sichuan (wingspan 53 mm) **h** ditto, female, paratype, China, Sichuan (wingspan 52 mm)



distally dilated in *Olivenebula* and *Thalpophila*), the corona is reduced or even rudimentary and located on the ventral margin of cucullus (it is present and strong in *Olivenebula* and *Thalpophila*, and the proximal section is characteristically turning inside the middle of valva along the sclerotised ventral edge of the digitus plate), the simple, stick-like, only apically hooked harpe (it is distally asymmetrically split in *Olivenebula* and *Thalpophila* either producing a furcate or a bilobate structure), the ventro-medial sclerotised and densely setose plate is missing (it is well developed in *Olivenebula* and present but strongly reduced in *Thalpophila*) and the

armature of vesica is different, consisting of longer and straighter spiniform cornuti arranged partly or fully on a subterminal/terminal diverticulum of a much longer, recylinate main tube of vesica (in *Olivenebula* there is a long fascia of curved, strong but comparatively shorter cornuti and with a short basal row of fine spinules; in *Thalpophila* there are two groups of strong basal-subbasal cornuti on a shortened, rather globular main tube of vesica).

In the female genitalia, the antrum, ductus bursae and appendix bursae are strongly sclerotised in *Chlorothalpa* (in *Olivenebula* the appendix bursae is not or only finely

scobinate-ribbed while the entire bursa copulatrix forms a narrowly tubular structure with strongly ribbed-sclerotised, rather quadrangular appendix bursae).

The subgenus *Chlorothalpa* is separable from the subgenus *Subthalpa* (**stat. rev., comb. rev.**) by the slenderer distal section of valva with more elongated cucullus and stronger developed corona, thinner and more arched harpe and the different armature of vesica forming a long row of strong spiniform cornuti running from the ventral carinal bar towards the small subterminal diverticulum (this row of cornuti is split into two groups in *C. (C.) xanthochloris* while it is continuous in *C. (C.) graslini*); the much larger, broader and widely sclerotised appendix bursae (it is smaller and only apically strongly sclerotised in *Subthalpa*), and the characteristically curved corpus bursae forming and L-shaped bursa copulatrix while it is regularly sacculiform in *Subthalpa*.

Distribution. Holo-Mediterranean-Iranian.

*Chlorothalpa (Chlorothalpa) xanthochloris* (Boisduval, 1840)

(Figs. 1b, 7b).

*Polyphaenis xanthochloris* Boisduval, 1840, *Genera et Index Methodicus Europaeorum Lepidopterorum*: 128. Type locality: Italy, Sicily.

Diagnosis. *Chlorothalpa (C.) xanthochloris* differ externally from *C. (C.) graslini* by their on average somewhat larger size and more unicolorous forewings with darker forewing ground colour and less prominently lighter defined crosslines and reniform stigma. It is worth to note that unicolorous and well-marked specimens occur in both species but their frequency in the populations is remarkably different.

The male genitalia of *C. (C.) xanthochloris* (Fig. 7b) can be distinguished from those of *C. (C.) graslini* (Fig. 7c) mostly by the arrangement of the cornuti of the vesica: in *C. (C.) xanthochloris* the long, spiniform cornuti form two groups, a large subbasal-medial group and a small terminal one while in *C. (C.) graslini* the cornuti form a long, continuous ridge from the subbasal diverticulum to the base of ductus ejaculatorius.

Distribution. The typical populations of *C. (C.) xanthochloris* occur in Sicily, the species can be found in Algerian and Moroccan Atlas region in the latter area it lives sympatrically with *C. (C.) graslini*.

*Chlorothalpa (Chlorothalpa) graslini* (Culot, 1913) **stat. rev.**

(Figs. 1c,d; 7c).

*Polyphaenis xanthochloris graslini* Culot, 1913, *Nocuelles et Geomètres d'Europe* 1: 200. Type locality: Spain, Castille.

Diagnosis. The taxon has long been considered as a geographic subspecies of *C. (C.) xanthochloris* though the two taxa occur partly sympatrically in the Moroccan Atlas massif. The populations living in the Iberian Peninsula are usually much lighter in colouration than the typical *C. (C.) xanthochloris*, and their antemedial and postmedial crosslines are stronger whitish defined, this definition is even more prominent in the North African specimens.

The diagnostic feature of the male genitalia is the continuous ridge of cornuti running from the base of subbasal ventral diverticulum to the origination of ductus ejaculatorius while in *C. (C.) xanthochloris* the cornuti are arranged into two separate groups (see Fig. 7b,c); the average number of cornuti is larger in *C. (C.) graslini* than in *C. (C.) xanthochloris*. There are some slight, mainly statistical differences in the clasping apparatuses of the two species (e.g. the shape of harpe, the proportion of the saccular and distal part of valvae, or the shape of cucullus, etc.) but for the identification the study of the vesica is essential.

Distribution. Iberian-Maghrebian. Confirmed localities of the species are known from the Iberian Peninsula and from Morocco.

*Chlorothalpa (Subthalpa) subsericata* (Herrich-Schäffer, 1861) **comb. nov.**

(Figs. 1e–h, 8a–c, 9a).

*Polyphaenis subsericata* Herrich-Schäffer, 1861, *Neue Schmetterlinge aus Europa und den angrenzenden Ländern*: 26, Fig. 124. Type locality: Greece, Rhodos.

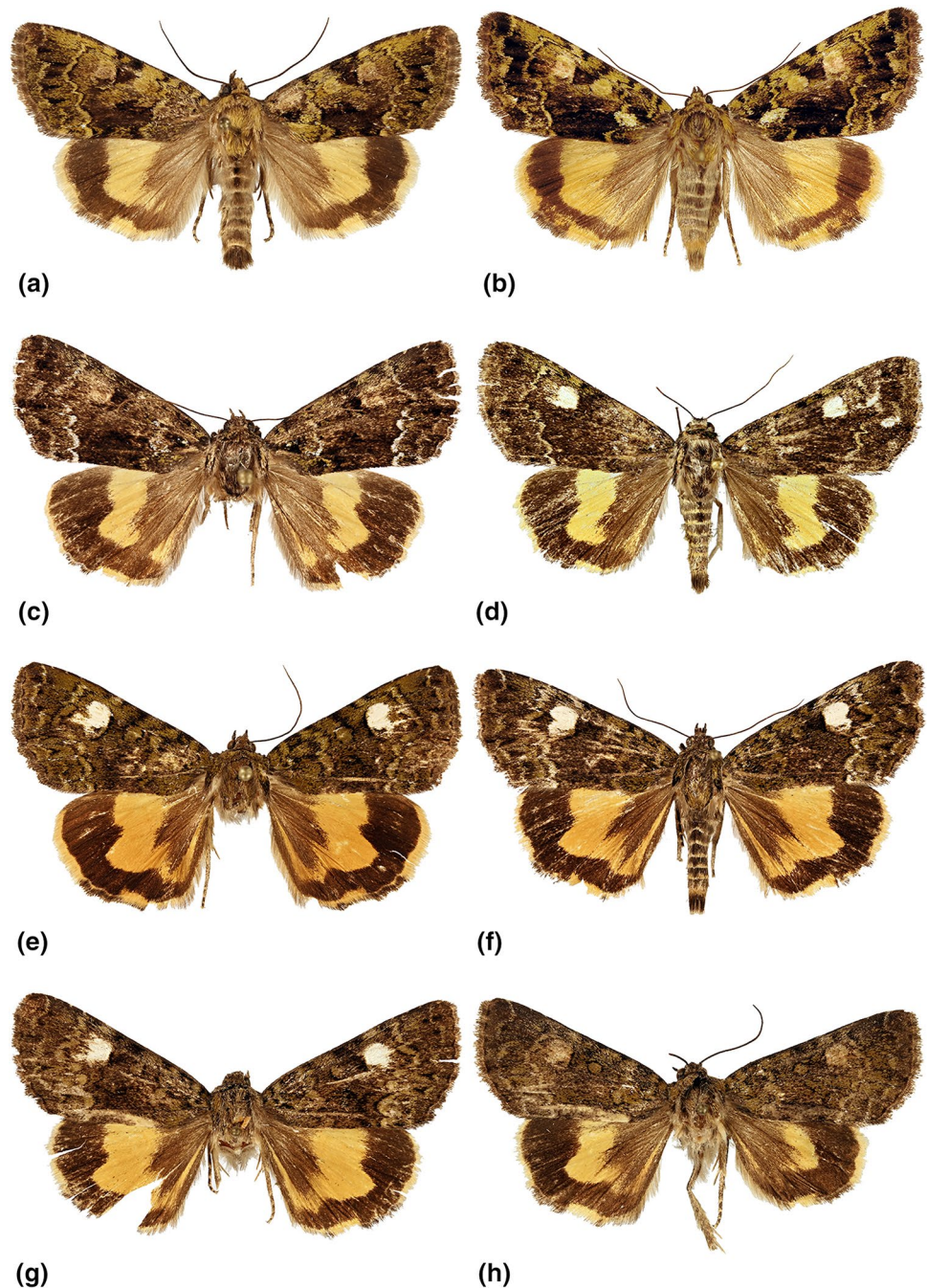
Synonymy.

*Thalpophila (Subthalpa) bobitsi* Beck, 1996, *Neue entomologische Nachrichten* 36: 63. Type locality: Turkey, Kizilcahamam.

Taxonomy. The populations occurring in the Balkans and in Asia Minor may represent two distinct subspecies as proposed by Beck during the description of ssp. *bobitsi* in 1996. His taxon from western Turkey is, however, synonymous with the typical *subsericata* as the type locality of *subsericata* is Rhodos. The reason of the confusion is that the island of Rhodos (and the Dodecanese islands) geographically (and zoogeographically) belongs to Asia Minor (the Anatolian region) while represent a part of the Greek State. Thus, as Rhodos is a part of Greece, the typical population is virtually "European" but taxonomically Asiatic. Unfortunately, not the Balkanic population was described as *bobitsi* but a Turkish one; therefore, the name cannot be used for the North Macedonian, Albanian, Bulgarian and peninsular Greek populations but is a synonym of *subsericata*.

*Chlorothalpa (Subthalpa) subsericata* has different colour forms and the forewing pattern is also variable, the holotype female is one of the unicolorous and blurred forms. Unfortunately, it had a glued abdomen belonging originally of an

**Fig. 3** *Olivenebula* spp., adults. **a** *O. monticola*, male, Taiwan (wingspan 42 mm), **b** ditto, female, Taiwan (wingspan 44 mm), **c** *O. sp.* close to *monticola*, female, Taiwan (wingspan 43 mm), **d** ditto, female, Taiwan (wingspan 43 mm), **e** *O. stanegomboci* sp. n., holotype, female, China, Shaanxi (wingspan 50 mm), **f** ditto, paratype, female, China, Shaanxi (wingspan 49 mm), **g** ditto, paratype, male, China, Shaanxi (wingspan 43 mm), **h** ditto, paratype, male, China, Shaanxi (wingspan 39 mm)



*Apamea* species; therefore, the genitalia of the holotype do not represent the species. The study of a larger material from the entire range of *C. (S.) subsericata* showed little variation in the male genitalia features but the females from the Balkans have wider and more rounded sclerotised appendix bursae and apical section of corpus bursae which may indicate their taxonomic distinctness from the Asiatic populations. For the infraspecific splitting of *C. (S.) subsericata*, a much wider survey would be desirable which requires the consideration of the populations from the Balkans, the Dodecanese islands, different parts of Turkey, the Near East and Cyprus,

including also molecular taxonomic investigations. On the other hand, the Kermanshah population (vicinity of Qasre-Shirin) shows differences in the genitalia of both sexes; thus, it is distinguished as a species distinct from *C. (S.) subsericata* and is described below.

**Diagnosis.** The well-marked forms of *C. (S.) subsericata* differ externally from the eastern sister species, *C. (S.) vargazoli*, by the more rounded medial section of antemedial line, the less laced outer part of postmedial line and the more ochreous-reddish filling of the medial area of the reniform stigma.

In the male genitalia, *C. (S.) subsericata* (Fig. 8a,b) differs from *C. (S.) vargazoli* (Fig. 9b) by the proportionally larger saccular part of valva, the longer and straighter harpe and the shorter and broader aedeagus with more recurved vesica.

In the female genitalia, the antrum and the posterior part of ductus bursae are broader in *C. (S.) subsericata* (Figs. 5h, 8), the anterior half of ductus bursae is more asymmetrically tapering towards the junction to distal part of corpus bursae and the sclerotised area of appendix bursae is much larger and apically more rounded than in *C. (S.) vargazoli* (Fig. 9c).

Distribution. Ponto-Mediterranean, the area extends from the southern half of the Balkans through the Dodecanese archipelago, most parts of Turkey, the Near East, Cyprus, Syria to the western parts of Transcaucasia and Iraq.

*Chlorothalpa (Subthalpa) vargazoli* Ronkay and Ronkay, **sp. n.**

(Figs. 2a,b, 9b, c).

Holotype. Male, Iran, SW Iran [Kermanshah Province], E of Kasri-Shirin, 24.X.1963, leg. E. and A. Vartian, slide No. RL13118m (coll. NHMW).

Paratype. Iran. 1 female, with same data as holotype, slide No. RL13124f (coll. NHMW).

Diagnosis. The new species is similar externally to the well-patterned forms of *C. (S.) subsericata*, displaying a few little differences only which cannot be used as key features. These differences are, however, visible and the general appearance of the moths with their paler hindwings is different from the large majority of specimens of *C. (S.) subsericata*. The small differences in the forewing markings are the medially peaked antemedial line, the more zigzagged postmedial line and the paler inner area of reniform stigma. The more orange-ochreous shade of the hindwings is more similar to that of *C. (C.) xanthochloris* and *C. (C.) graslini* than to that of *C. (S.) subsericata*. Wingspan 45–51 mm.

The male genitalia of *C. (S.) vargazoli* (Fig. 9b) are separable from those of *C. (S.) subsericata* (Figs. 8a,b) by the longer and slenderer aedeagus and the less recurved vesica; comparing the clasping apparatuses of the two species, the saccular part of valva is proportionally shorter, the distal third of valva is more dilated, and the harpe is more curved in the new species than in its sister taxon.

In the female genitalia, the antrum of *C. (S.) vargazoli* (Fig. 9) is narrower and better separated from ductus bursae than in *C. (S.) subsericata*, the ductus bursae is more symmetrically tapering towards corpus bursae and the appendix bursae is smaller, its sclerotised part is less rounded apically.

Distribution. The new species is known from the type locality (Iran: Kermanshah) only; the typical population is the easternmost known *Subthalpa* population. The moths are on the wing in October; *C. (S.) subsericata* has an earlier flight period, extending from the second part of August to the end of September.

Genus *Olivenebula* Kishida and Yoshimoto, 1977

(Figs. 2c–h, 3a–h, 4a,b).

*Olivenebula* Kishida and Yoshimoto, 1977, *Tyo to Ga* 28(4): 144. Type species: *Polyphaenis oberthueri* Staudinger, 1892, by original designation.

Taxonomy. The genus was established for two Manchurian-Pacific species (Kishida and Yoshimoto 1977) and was compared with *Triphaenopsis* Butler, 1878; these two genera really show remarkable differences in their genitalia, despite the somewhat similar external appearance of all known species. The closest relative of *Olivenebula* is, however, not *Triphaenopsis* but the western Palaearctic *Thalpophila*; this fact is easily recognisable by the conspicuous synapomorphies of the two genera. These are, besides the also similar external habitus, the distally strongly dilated, falcate uncus, the triangular, apically (dorsally) split juxta, the characteristic proximal arch of the coronal setae in the cucullus, the presence of the subapical ventral lobe, the apically bilobate/bifurcate harpe (clasper), the specially modified penicular lobes, and the two fasciae of cornuti of the short, membranous vesica in males, or the swollen and partly longitudinally ribbed ductus bursae in the females. The differential features are discussed in the Diagnosis of the genus (Fig. 5).

Diagnosis. The main differential features between *Olivenebula* and *Thalpophila* are as follows. Externally, the members of *Olivenebula* have characteristically dark ringed abdominal segments and well-developed tufts of dorsal crest which are missing or weakly developed in *Thalpophila*, and the yellow hindwing has much stronger dark marginal band and dark inner area which makes the hindwing more similar to that of the taxa of the *Noctua janthina* (Denis and Schiffermüller, 1775) species complex.

The shared features of the genitalia of *Olivenebula* and *Thalpophila* (see Figs. 6a–c, 7a–c, 8a–c, 9a–c, 10a–c, 11a–c, 12a–c) are mentioned above in the Taxonomy paragraph, these characters appear, however, in different character states which make them (and their closely allied genera *Chlorothalpa* and *Dandirania*) clearly separable; besides them, there are a few autapomorphic states like the structures of the penicular lobes or the position and configuration of the appendix bursae.

In the male genitalia of *Olivenebula*, the uncus is always much longer with long and thin basal "pedicel", the basal penicular lobes are much longer and more densely hairy apically, the corona is stronger and longer, the harpe is much narrower basally and (variably strongly) bifurcate (not apically asymmetrically bilobate as in *Thalpophila*), and the armature of the vesica is different, consisting of a large distal fascia of cornuti and a short row of fine spinules on or at the end of an eversible carinal bar (in *Thalpophila*, there are two groups of large cornuti arranged into two longer fasciae). In addition, *Olivenebula* has a small ventro-medial

sclerotised plate aside the basal plate of harpe which is densely hairy and has a supposed sensory function; this plate is missing from *Thalpophila*. Such hardly removable sensory hair brushes are present along the ventral valval margin of *Olivenebula* from the valval tip to the saccular end which are also absent in *Thalpophila*.

In the female genitalia, the antrum of *Olivenebula* is always cup- or funnel-like and connected to ductus bursae with a short, narrow membranous neck, in *Thalpophila* this part is the broadest section of ductus bursae; the appendix bursae of *Olivenebula* is smaller or larger but always located at junction of ductus bursae to corpus bursae while the appendix bursae of *Thalpophila* is partly behind the ventral walls of ductus bursae; finally, the corpus bursae of *Olivenebula* is elliptical ovoid or shortly saccate while it is much longer and thinner in *Thalpophila*.

The differences between *Olivenebula* and the newly described genus *Dandirania* are discussed under the Diagnosis of the latter genus.

**Distribution.** Himalayan-Sino-Pacific. The range of the genus is extending from the eastern mountain regions of the Tibetan Plateau (Yunnan and Sichuan) through the central Chinese mountains (Taibaishan area in Shaanxi), Manchuria, the Korean Peninsula and the Russian Far East to Japan to the north-east and Taiwan to the south-east.

*Olivenebula oberthueri oberthueri* (Staudinger, 1892)

(Figs. 2c,d, 10a, b).

*Polyphaenis oberthueri* Staudinger, 1892, in Romanoff: *Mémoires sur les Lépidoptères* 6: 454. Type locality: Russia, Russian Far East, Askold.

**Diagnosis.** The type species of the genus differs from the continental Chinese congener, *O. stanegomboci* by its narrower and not or only partly white filled/encircled reniform stigma and the narrower yellow medial band of the hindwing; from *O. monticola* by the more robust body and narrower forewings, and the darker and broader hindwing marginal band and darker orange-yellow hindwing median area; from *Dandirania (Confectania) confecta* mostly by the more distinctly marked antemedial and postmedial crosslines and the less prominent dark hindwing tornal triangle of the marginal band.

The distinctive features of the two subspecies of *O. oberthueri* are discussed under the diagnosis of the ssp. *thomasbaroni*.

The male genitalia of the three *Olivenebula* species are easily distinguished by their different valval shape, differently built harpe and the configuration and armature of the vesica. The specific features of *O. oberthueri* (Fig. 10a) are the long, broad and pointed triangular cuculli with well-developed subapical ventral lobe (the cucullus is more rounded and the lobe is missing in *O. monticola* (Fig. 11b) and *O. stanegomboci* (Fig. 12b)), the rather

short and strongly bifurcate harpe (it is longer and not or only slightly furcate in the other two species), and the rather short and moderately dilated vesica with a dorsally positioned fascia of strong, finely arched cornuti continuing in a ventro-laterally curved row of much smaller denticles towards the carina (in *O. monticola* the vesica is longer and more ample and armed by a fascia of cornuti much farther from carina while in *O. stanegomboci* the vesica is rather tubular, the long fascia of cornuti is positioned ventrally and a short row of tiny spinules is present in continuation of the dorsal carinal bar).

The female genitalia of the three closely related species differ in the shape, size and sclerotisation of antrum, ductus bursae and appendix bursae. The antrum of *O. oberthueri* (Fig. 10b) is narrower and more cylindrical, not funnel-like as in the other two species (Fig. 12a,c), the ductus bursae is medium-long and sclerotised, medially strongly broadened (it is much longer and thinner, more tubular in *O. stanegomboci* while it is short and membranous in *O. monticola* but the appendix bursae is large and sclerotised-longitudinally ribbed since it is small and rather membranous in the other two species).

The genitalia of the fourth externally similar species, *Dandirania (C.) confecta* display more conspicuous differences comparing those of the members of *Olivenebula*, the group features of *Confectania* are discussed under the diagnosis of the new subgenus.

**Distribution.** Manchurian-Pacific; the area of the typical subspecies includes the Russian Far East, Manchuria, Korea and Japan, while the ssp. *thomasbaroni* occurs in Sichuan.

**Note.** The specimen illustrated by Chen (1999) under the name "*Polyphaenis oberthueri* (sic!)" represents most probably *Dandirania (Wallaceania) sramkogabori*.

*Olivenebula oberthueri thomasbaroni* ssp. n.

(Figs. 2e–h, 10c, 11a).

**Holotype.** Male, China, Prov. Sichuan, 70 km NW Chengdu, Qingchenghousan Mts, 1400 m, 16–25.VIII.2005, leg. V. Murzin, slide No. OP5524m (coll. G. Ronkay, in NHMW).

**Paratypes.** China, Sichuan. 4 males, with same data as holotype, slide Nos OP5523m, OP5525m, OP5526m and RL13525m (coll. G. Ronkay in NHMW); 8 males, 2 females, from Tatsienlou: 4 males, Exp. Stötzner, Nos 26305, 26,306, 26,789, 26,790, slide No. RL13114m; 1 male, Chasseurs Indigenes, 1898, slide No. RL13115m; 1 male, Chasseurs Indigenes du P. Déjean, 1903, 2 males, Chasseurs Indigenes des Missionnaires de Tatsienlou, 1906, slide No. RL13116m; 1 female, Chasseurs Indigenes du P. Déjean, 1902, slide No. RL13117f; 1 female, Chasseurs Indigenes du P. Déjean, 1901; 1 male, "Frontiere orientale du Thibet, Chasseurs indigènes du P. Déjean, 1905"; 1 male, Siao-Lou, 1900, Chasseurs Indigenes (coll. NHMW).



**Diagnosis.** The southern subspecies of *O. oberthueri* differs externally from the typical populations by the slenderer body, broader forewings with somewhat more convex costa, more distinctly marked orbicular and reniform stigmata and the better visible subterminal line.

In the male genitalia, the cucullus of *O. oberthueri thomasbaroni* (Fig. 10c) is broader and apically less pointed than in the ssp. *oberthueri* (Fig. 10a) but the subapical ventral lobe is more prominently triangular, the harpe is less furcate, the vesica is somewhat longer and the large fascia of cornuti consists of longer spines. Wingspan 43–53 mm.

In the female genitalia, the ssp. *thomasbaroni* (Fig. 11a) has longer and medially less dilated ductus bursae than in the typical subspecies (Fig. 11b).

**Distribution.** Sino-Tibetan. The new subspecies is known from the mountains of Sichuan (China), along the eastern frontier of the Tibetan Plateau.

**Etymology.** The new subspecies is dedicated to Thomas R. Baron (Turunç, Marmaris, Turkey), explorer of the Turkish Noctuidae Fauna.

*Olivenebula monticola* Kishida and Yoshimoto, 1977

(Figs. 3a,b, 11b, c).

*Olivenebula monticola* Kishida and Yoshimoto, 1977, *Tyo to Ga* 28(4): 145, Figs. 1a,b. Type locality: Formosa [Taiwan], Nantou County, Hohuan Mt.

**Taxonomy.** *Olivenebula monticola* is considered as the endemic *Olivenebula* species of Taiwan. There are, however, two sympatrically occurring species in Taiwan, *O. monticola* and a still unnamed taxon (Fig. 3c,d; Fu et al 2021: plate 37, Fig. 5 c,d), resembling externally more *O. oberthueri* than *O. monticola* by its more angular forewings with darker colouration and the broader dark marginal band and inner dark suffusion of hindwing. The female genitalia (Fig. 12a) show, however, its close relationship with *O. monticola*; the more detailed investigation of this taxon, as well as the supraspecific position of the *monticola*-lineage will be published in a forthcoming paper.

**Diagnosis.** *Olivenebula monticola* is separable from the other congeners by the paler yellow hindwing ground colour with usually narrow and lighter brown marginal band and inner brownish suffusion. Another diagnostic feature is the light ochreous-greenish filled orbicular stigma which is regularly paler than in the other *Olivenebula* species; and the costal area of forewing is usually lighter, more olive-greenish than the median field below cell.

The specific features of the male genitalia (Fig. 11b) are the rounded ventral edge of valva below cucullus, lacking the subapical ventral triangular lobe, the relatively short row of coronal setae, the very long and slender, not furcate harpe, and the ample, inflated vesica with a short fascia of cornuti; the distal part of uncus is also somewhat longer and slenderer than in the other members of the genus.

The female genitalia (Fig. 11c) differ from those of *O. oberthueri* and *O. stanegomboci* (Figs. 9b, 11a) by the much shorter and membranous-rugose ductus bursae, the elongate-sacculiform corpus bursae and the remarkably larger, subconical appendix bursae having fin scobination and long, sclerotised crests and ribs.

**Distribution.** Endemic to Taiwan.

*Olivenebula stanegomboci* sp. n.

(Figs. 3e–h, 12b,c).

**Holotype.** Female, China, Shaanxi, Tsinling Mts, South Taibaishan, Houzhenzi, 1600 m, N33°53', E107°49', 15.VIII.–15.X.1999, leg. local collector, slide No. OP5520f (coll. G. Ronkay, NHMW).

**Paratypes.** China, Shaanxi. 3 males, 1 female, with same data as holotype, slide Nos RL13532m, RL13533f, and RL13534m (coll. Gy. Fábrián, Budapest and G. Ronkay, NHMW); 1 female, South Taibaishan, Tsinling Mts, Houzhenzi 1400 m, N33°51', E107°49', IX.1999, leg. local collector, slide No. OP5521f (coll. G. Ronkay, NHMW).

**Diagnosis.** The new species is the continental sister species of *O. monticola* and its still unnamed twin species. It differs externally from *O. monticola* by its broader forewing with generally darker colouration, dark filled orbicular and larger, most often white filled reniform stigma and the deeper orange-yellow hindwings with darker and broader marginal band, having stronger subapical and tornal protrusions; from the unnamed Taiwanese relative mostly by the deeper hindwings, more uniformly dark forewing ground colour and the wider double postmedial line; from both subspecies of *O. oberthueri* by the more concolorous dark forewings with larger reniform stigma. Wingspan 39–50 mm.

The male genitalia of *O. stanegomboci* (Fig. 12b) differ from those of *O. monticola* (Fig. 11b) by the somewhat shorter and distally more dilated uncus, the stronger corona, the shorter and medially slightly furcate harpe and the longer and much thinner, rather tubular vesica armed by a longer fascia of strong cornuti positioned ventrally; from those of *O. oberthueri* (Fig. 10a) by the shorter and distally more dilated uncus, the absence of the triangular subapical ventral lobe, the proportionally longer and less furcate harpe and the longer and straighter, more tubular vesica with smaller subbasal row of short spinules and ventrally positioned fascia of cornuti.

The female genitalia of the new species (Fig. 12c) are more similar to those of *O. oberthueri* (Fig. 10b) than to *O. monticola* (Fig. 11c) by its long and partly sclerotised, medially swollen ductus bursae, elliptical ovoid corpus bursae and small, membranous appendix bursae. The two species are easily separable from each other by the measures of ductus bursae which is much longer and thinner in *O. stanegomboci* and the antrum is also broader, more funnel-like than in *O. oberthueri*.

**Distribution.** The new species is found in the Central Chinese mountain system (Prov. Shaanxi, Taibaishan area, Tsinling Mts).

**Etymology.** The new species is dedicated to Stanislav ("Stane") Gomboc (Ljubljana, Slovenia), explorer of the Lepidoptera of the Alps and the Adriatic region of the Balkans.

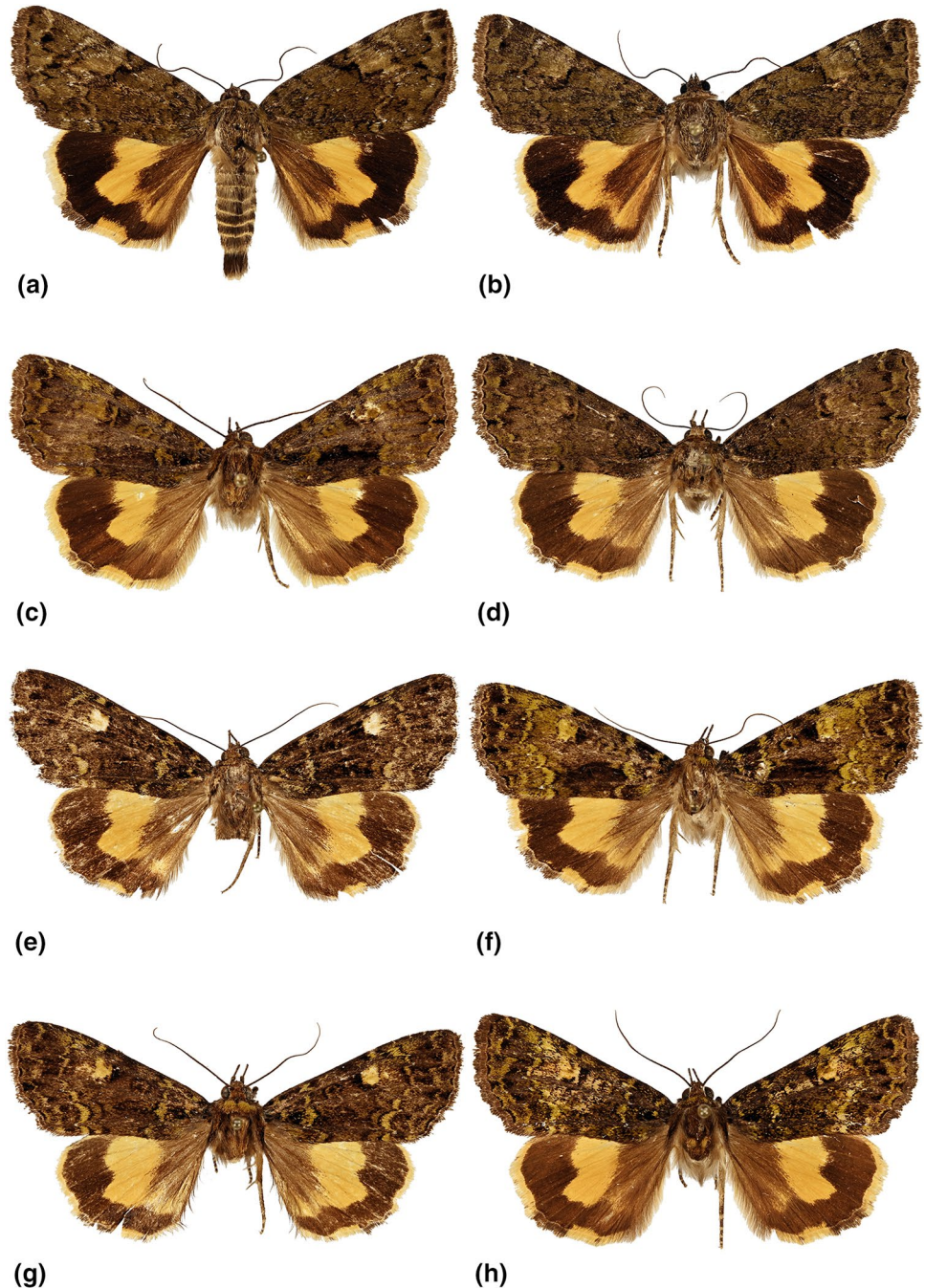
Genus *Dandirania* gen. n.

(Figs. 4c–h, 5a–h, 13c, 14a–c, 15a–c, 16a–c).

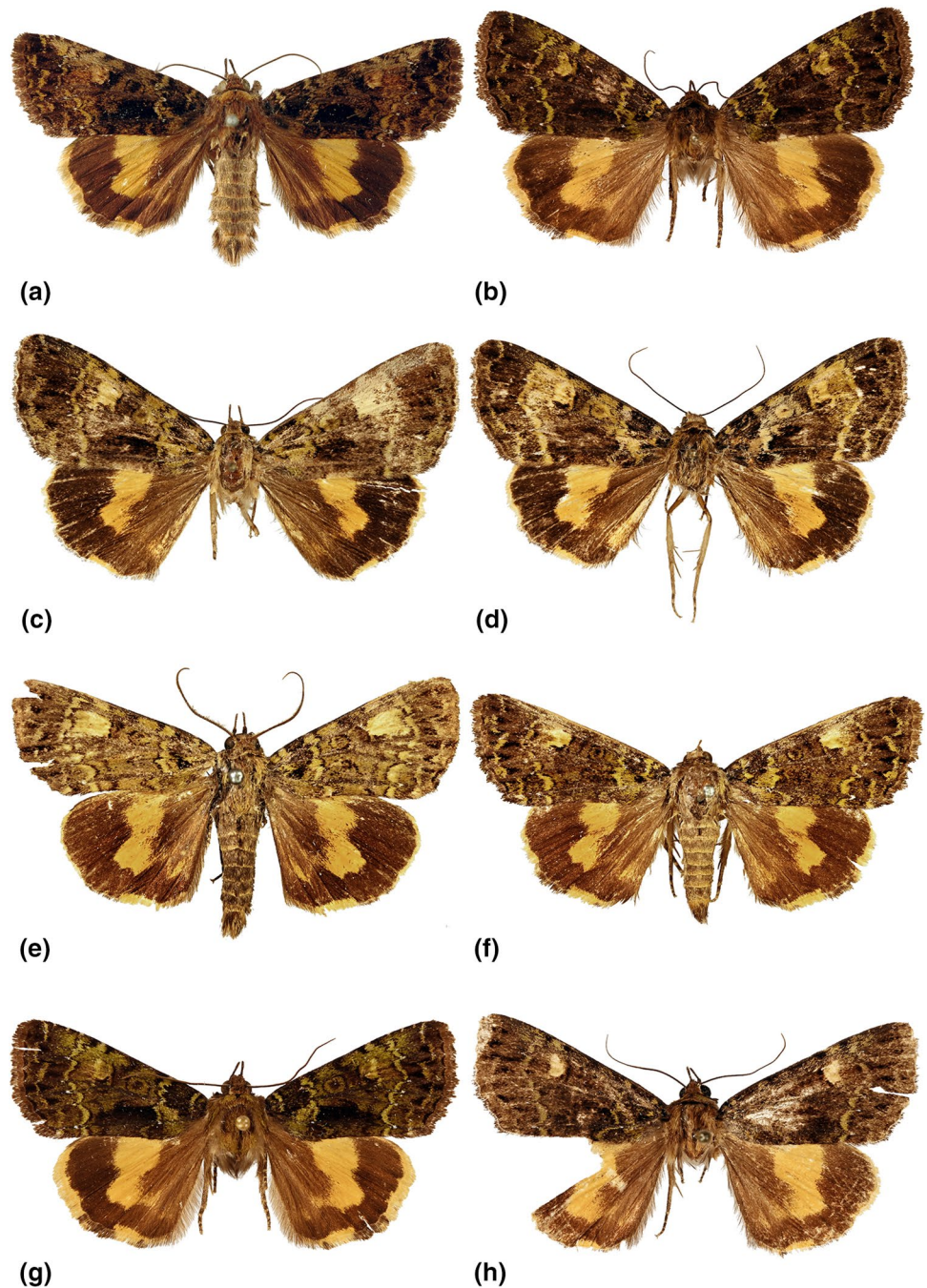
*Dandirania* gen. n. Type species: *Epilecta pulcherrima* Moore, 1867, here designated.

**Taxonomy.** The genus includes three major lineages which are interpreted here as three different subgenera, *Dandirania*, *Confectania* and *Wallaceania*. These groups are easily distinguished by their wing shape, length of palpi and the genitalia of both sexes and are unified by the characteristic configuration of the vesica and the female antrum and ductus bursae which demonstrate their close relationship and separation from *Olivenebula*. Their characterisation is provided in the Diagnoses of the three subgenera.

**Fig. 4** *Dandirania* spp., adults. **a** *D. confecta*, male, Pakistan, Murree Hills (wingspan 41 mm), **a** ditto, female, Pakistan, Kaghan valley (wingspan 44 mm), **c** *D. opulenta opulenta*, male, Pakistan, Kaghan valley (wingspan 48 mm), **d** ditto, female, Pakistan, Murree Hills (wingspan 55 mm), **e** *D. opulenta schreieri* ssp. n., holotype, female, Nepal, Ganesh Himal (wingspan 51 mm), **f** ditto, paratype, female, Nepal, Ganesh Himal (wingspan 52 mm), **g** ditto, paratype, male, Nepal, Ganesh Himal (wingspan 48 mm), **h** *D. pulcherrima*, male, Nepal, Ganesh Himal (wingspan 47 mm)



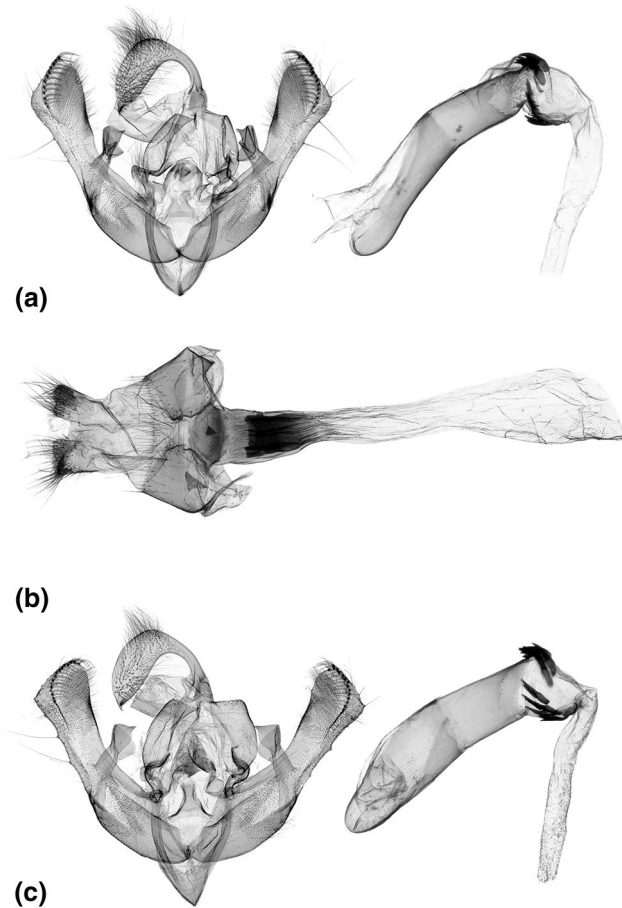
**Fig. 5** *Dandirania* spp., adults. **a** *D. pulcherrima*, male, lectotype, India, Darjeeling (wingspan 47 mm), **b** ditto, female, Nepal, Annapurna Himal (wingspan 46 mm), **c** *D. sramkogabori* sp. n., holotype, female, China, Shaanxi (wingspan 45 mm), **d** ditto, paratype, female, China, Shaanxi (wingspan 46 mm), **e** *D. largeteaui*, male, China, Sichuan (wingspan 40 mm), **f** ditto, male, China, Sichuan (wingspan 47 mm), **g** *D. alfredrussellwallacei* sp. n., holotype, male, Nepal, Kanchenjunga Himal (wingspan 42 mm), **h** ditto, paratype male, Nepal, Ganesh Himal (wingspan 40 mm)



**Diagnosis.** The new genus is characterised by the long, stick-like third joints of labial palps (the only exception is the *confecta* lineage where the third joint is short like in *Olivenebula*), the small and rounded, densely hairy penicular lobes, the shortened, often strongly reduced corona, the medially-subapically flattened and dilated harpe, the shortened vesica with large basal-subbasal dentated ("raduloid") plate and a smaller or larger field of cornuti composed of small, acute teeth (a densely spinose carinal plate may be also present), the sclerotised ring-like antrum, the short and membranous ductus bursae, the

finely ribbed-scobinate appendix bursae, and the entirely membranous, saccate corpus bursae.

In *Olivenebula*, the third joint of the labial palp is short, much shorter than the second joint; the penicular lobes are longer, bearing an apical brush of short, fine hairs; the cucullus and corona are long, with strong coronal setae; the harpe is subapically not dilated but stronger or weaker furcate; the vesica is membranous with a long distal fascia of strong cornuti arranged into a single row and a short subbasal row of fine spinules connected to the ventro-lateral carinal bar, these two rows of cornuti may produce a rather continuous



**Fig. 6** *Thalpophila* spp., genitalia. **a** *Th. matura*, male, Turkey, Gebze, slide No.: RL13132m, **b** ditto, female, Turkey, Gebze, slide No.: RL13131f, **c** *Th. vitalba*, male, Morocco, High Atlas Mts, slide No.: RL13133m

row of spines from carina penis to distal end of vesica; the antrum is calyculate or funnel-like, and the ductus bursae is either short and membranous (in this case the appendix bursae is large and ribbed and the corpus bursae is elliptical ovoid) or long, medially variably strongly swollen and rather strongly sclerotised.

**Distribution.** Himalayan-Sino-Tibetan.

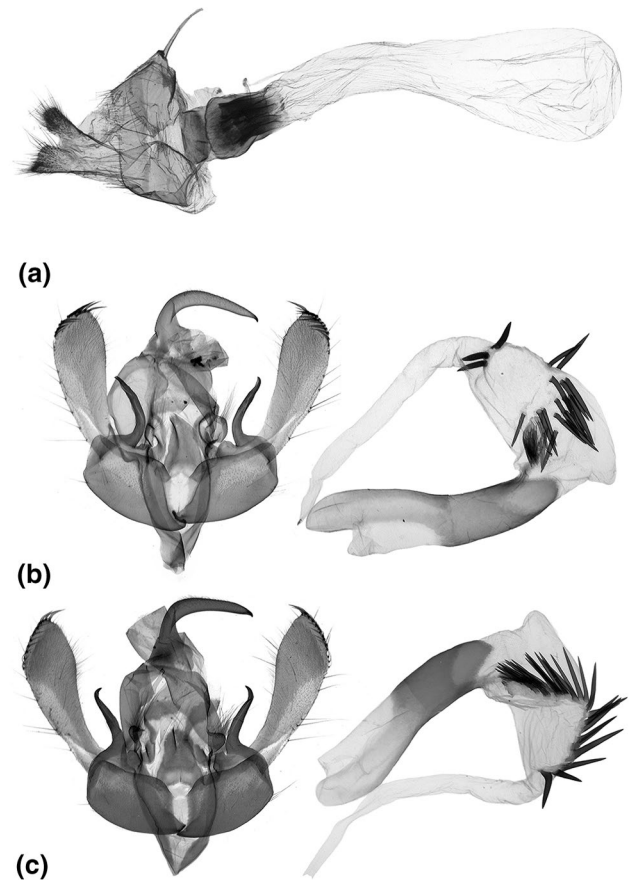
**Etymology.** The new genus is dedicated to Olivier d'Andiran, President of the Board of the Friendly Society of the natural History Museum Geneva.

#### Subgenus *Dandirania* subgen. n.

(Figs. 4c–h, 5a–h, 13c, 14a–c, 15a–c, 16a–c).

*Dandirania* subgen. n. Type species: *Epilecta pulcherrima* Moore, 1867, here designated.

**Diagnosis.** The autapomorphic male genitalia features of the subgenus (Figs. 13c, 14b, 15a) are the simple, comparatively short and distally not dilated uncus, the very long



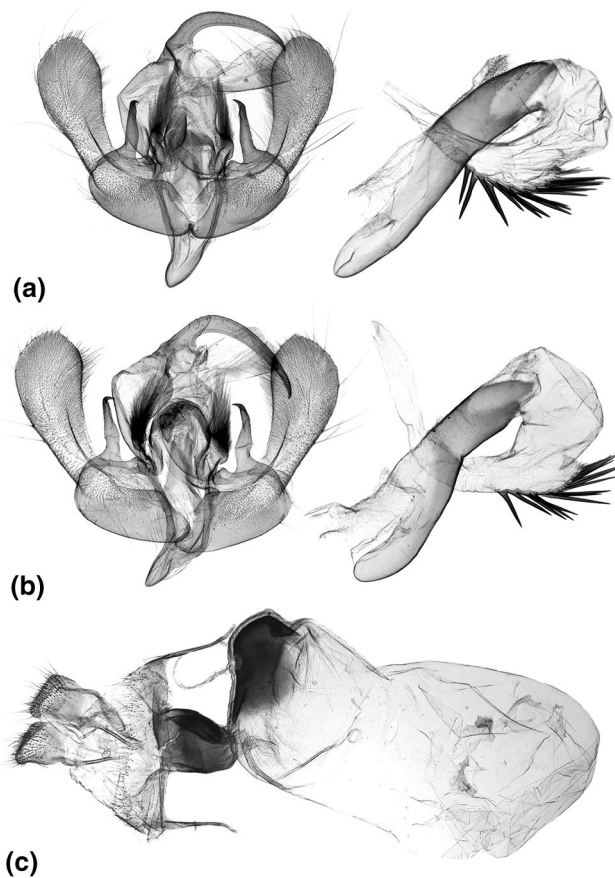
**Fig. 7** *Thalpophila* and *Chlorothalpa* spp., genitalia. **a** *Th. vitalba*, female, Italy, Sicily, slide No.: RL13134f, **b** *Ch. xanthochloris*, male, Morocco, High Atlas Mts, slide No.: OP5530m, **c** *Ch. graslini*, male, Spain, Teruel, Orihuela, slide No.: OP5529m

bristle-hairs on the rounded penicular lobes, the rather wide and apically (dorsally) less incised juxta, the characteristic falcate distal section of valva with very short and weak corona, the broad and subapically flattened and angled, rather bird-head-shaped harpe, the well-developed spinose carinal plate, the short and ventrally bent vesica with larger basal and smaller medial spinose-dentate areas. The female genitalia (Figs. 15a,c, 16b) are characterised by the sclerotised ring-like antrum, the short and broad, slightly sclerotised ductus bursae, the finely ribbed-rugose appendix bursae and the rather long sacculiform corpus bursae.

**Distribution.** Southern Himalayan. The area of the subgenus is restricted to the southern and south-western Himalayas, from the Kaghan valley region in Pakistan to the Kanchenjunga massif in eastern Nepal and the Indian Sikkim.

*Dandirania* (*Dandirania*) *opulenta opulenta* (Butler, 1889) **comb. n.**

(Figs. 4c, d, 13c, 14a).

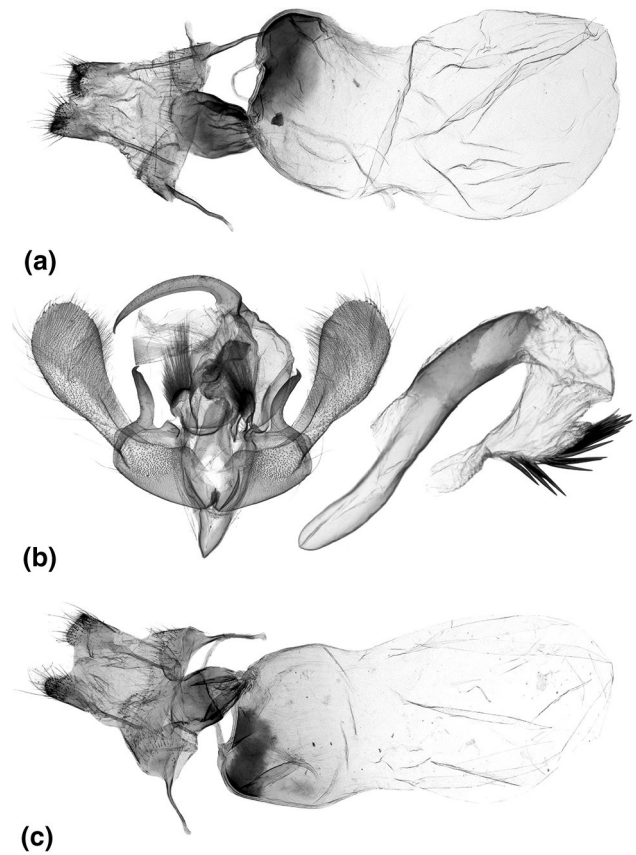


**Fig. 8** *Chlorothalpa subsericata*, genitalia. **a** male, Turkey, Kizilcahamam, slide No.: RL13122m **b** male, Greece, Samos, slide No.: RL13140m, **c** female, Turkey, Kizilcahamam, slide No.: RL13227f

*Eliochroea opulenta* Butler, 1889, *Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum* 7: 73, pl. 131, Figs. 1e,f. Type locality: [India] Dharmasala.

**Diagnosis.** The typical populations of *D. (D.) opulenta* differ externally from the eastern (Central and eastern Nepalese) ssp. *schreieri* by their more unicolorous forewings with less prominent paler filling of antemedial and postmedial crosslines, the stronger dark filling of reniform stigma and the darker, broader hindwing marginal band (both subspecies have different colour forms, the whitish filled reniform stigma may be present in the ssp. *opulenta*, too). Both subspecies of *D. (D.) opulenta* differ from *D. (D.) pulcherrima* by their somewhat larger wingspan (46–56 mm vs 44–50 mm, respectively), darker abdomen, most often broader and longer forewings with more unicolorous median field, somewhat broader double postmedial line and the usually wider hindwing yellow medial area.

The male genitalia of the two closely related species (Figs. 13c, 14b vs 15a) show only slight though recognisably differences in the shape of the harpe and the carinal spinose



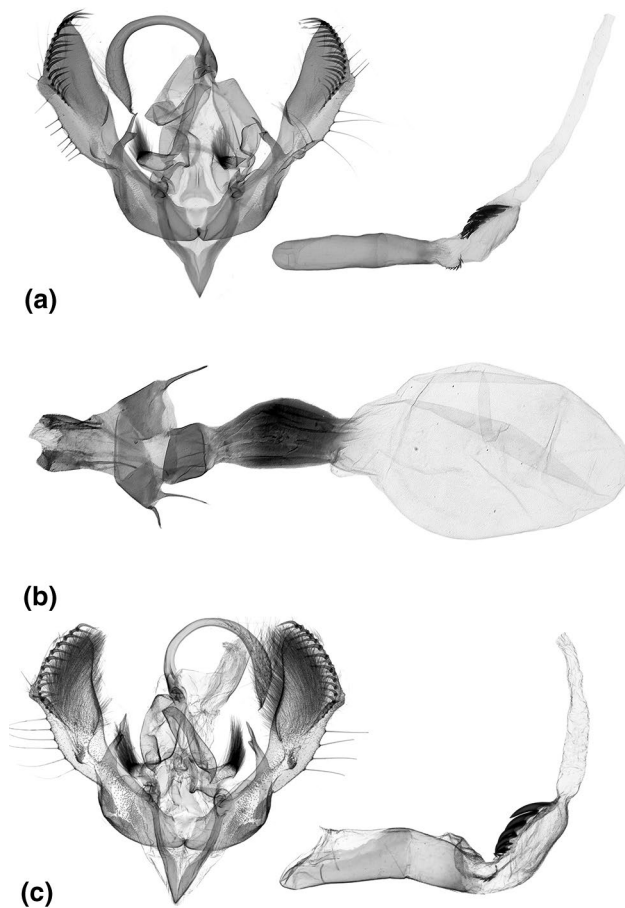
**Fig. 9** *Chlorothalpa* spp., genitalia. **a** *Ch. subsericata*, male, Greece, Samos, slide No.: RL13139f, **b** *Ch. vargazoli* sp. n., holotype, male, Iran, Kermanshah, slide No.: RL13118m, **c** ditto, paratype, female, Iran, Kermanshah, slide No.: RL13124f

plate. The harpe of *D. (D.) opulenta* has larger and more pronounced dorsally more rectangular subapical flattened section and shorter apical process than in *D. (D.) pulcherrima*, and larger, more densely spinose carina penis.

The differences between the female genitalia are more distinctive as the antrum of *D. (D.) opulenta* (Fig. 14a) is much stronger sclerotised, broader than in *D. (D.) pulcherrima* (Fig. 15b), the ductus bursae is also broader and stronger, and the appendix bursae is more quadrangular and only longitudinally ribbed while it is subconical and apically more scobinate in *D. (D.) pulcherrima*.

**Distribution.** South-western Himalayan. The species is distributed in the monsoonic areas of the Pakistani Himalayas and in NW India (Himachal Pradesh).

**Note.** The name of the taxon is first mentioned by Butler in 1883 as "EPILECTA OPULENTA. *Epilecta opulenta*, Moore MS. The example is imperfect, the wings being broken and the abdomen and antennae wanting. The species is in Mr. Hocking's collection". (*Proceedings of the Zoological Society of London* 1883: 160). The proper description is provided six years later; thus, this latter date is used with the



**Fig. 10** *Olivenebula* spp., genitalia. **a** *O. oberthueri oberthueri*, male, Russian Far East, slide No.: OP5511m, **b** ditto, female, Russian Far East, slide No.: OP5512f, **c** *O. oberthueri thomasbaroni* sp. n., paratype, male, China, Sichuan, slide No.: RL13114m

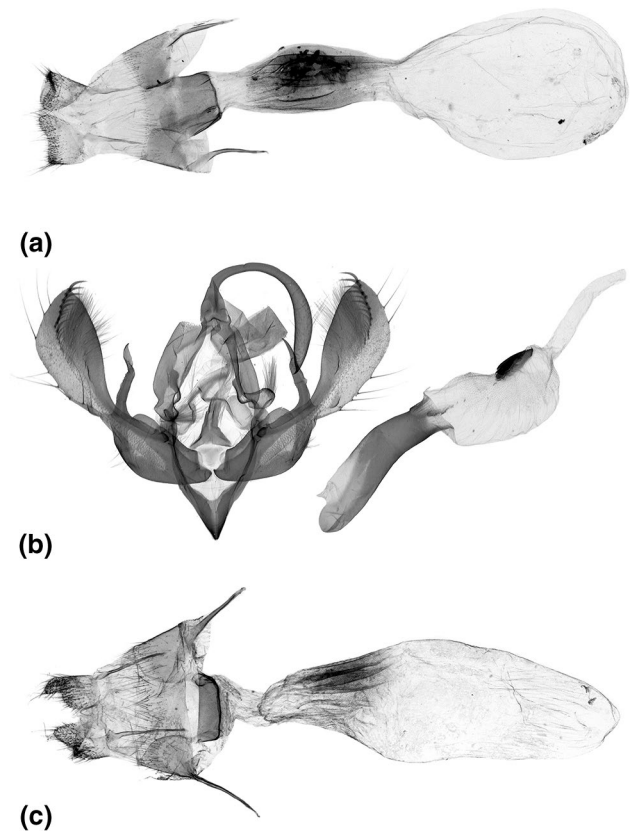
authorship of Butler though the species is first recognised, according to Butler, by Frederic Moore.

*Dandirania (Dandirania) opulenta schreieri* ssp. n.

(Figs. 4e–h, 14b,c).

Holotype. Female, Nepal, Ganesh Himal, 2950 m, 7 km W of Godlang, 85°17'E, 28°10'N, 14.IX.1995, leg. B. Herczig and Gy.M. László, slide No. RL13531f (coll. G. Ronkay, NHMW).

Paratypes. Nepal, Ganesh Himal. 1 male, with same data as holotype; 1 male, 3 females, near Godlang, 2520 m, 85°17'E, 28°10'N, 13.IX.1995, leg. B. Herczig and Gy.M. László, slide Nos OP5519f, RL13521m; 2 females, 3 km W of Gogne, 1700 m, 85°12'E, 28°05,5'N, 23.IX.1995, leg. B. Herczig and Gy.M. László, slide No. RL13528f (coll. G. Ronkay, NHMW). Annapurna Himal. 1 female, Bhaleodar, 2400 m, 2 km SE Nangethanti, 83°44'E, 28°33'N, 8.X.1994, leg. G. Csorba and G. Ronkay, slide No. OP5518f; 1 male, 1 km NW Chitre, 2300 m, 83°41'E, 28°25,5'N, 23.VII.1995, leg. Gy.M. László and



**Fig. 11** *Olivenebula* spp., genitalia. **a** *O. oberthueri thomasbaroni* sp. n., paratype, female, China, Sichuan, slide No.: RL13117f (Photograph Harald Bruckner), **b** *O. monticola*, male, Taiwan, slide No.: OP5502m, **c** ditto, female, Taiwan, slide No.: RL13082f

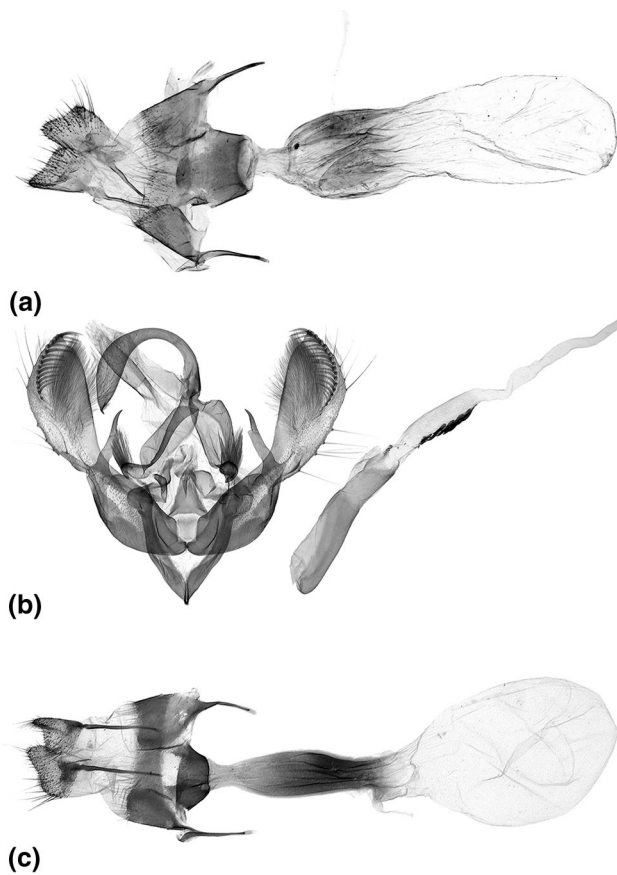
G. Ronkay (coll. G. Ronkay, NHMW). Koshi, Taplejung area. 2 females, Lal Kharka, 2250 m, 10.X.1994, leg. T. Csővári and M. Hreblay (coll. T. Csővári). West Nepal. 1 male, 1 female, 11 km N of Dailekh, 2350 m, 29.VII.1996, leg. M. Hreblay and B. Szin, MHNG ENTO 62951, 62,970 (coll. MHNG).

Diagnosis. The eastern subspecies of *D. (D.) opulenta* differs externally from the typical ssp. *opulenta* by its more variegated forewing with more granulated scaling, more often white(ish) filled reniform stigma lacking the upper dark inside patch, and the broader yellow band of the hindwing. Wingspan 48–56 mm.

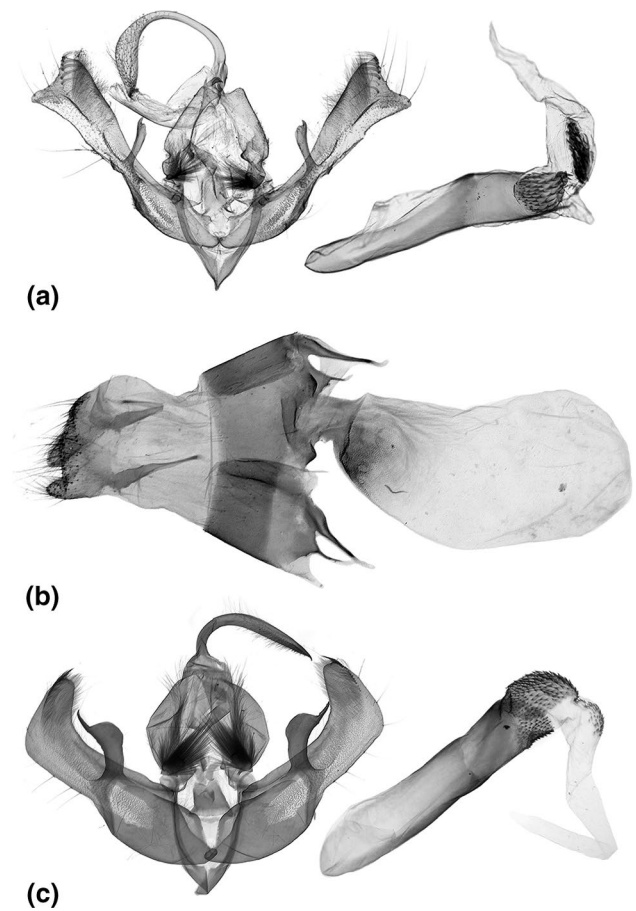
The male genitalia of the two subspecies (Figs. 13c, 14b) show no mentionable differences; in the female genitalia (Fig. 14a,c) the appendix bursae is less intensely ribbed-rugose in the ssp. *schreieri* than in the ssp. *opulenta*.

Distribution. Nepal (West Nepal, Annapurna Himal, Ganesh Himal and Koshi: Taplejung area).

Etymology. The new species is dedicated to Hans-Peter Schreier (Strullendorf-Geisfeld, Germany), explorer of the European and western Asiatic Noctuoidea, expert of the African *Nolini*.



**Fig. 12** *Olivenebula* spp., genitalia. **a** *O.* sp. close to *monticola*, female, Taiwan, slide No.: RL13081f, **b** *O. stanegomboci* sp. n., paratype, male, China, Shaanxi, slide No.: RL13532m, **c** ditto, holotype, female, China, Shaanxi, slide No.: OP5520f



**Fig. 13** *Dandirania* spp., genitalia. **a** *D. confecta*, male, Pakistan, Murree Hills, slide No.: RL13041m, **b** ditto, female, Pakistan, Kaghan valley, slide No.: OP5505f, **c** *D. opulenta opulenta*, male, Pakistan, Kaghan valley, slide No.: OP5517m

*Dandirania (Dandirania) pulcherrima* (Moore, 1867)  
**comb. n.**

(Figs. 4h, 5a,b, 5, 15a,b).

*Epilecta pulcherrima* Moore, 1867, *Proceedings of the Zoological Society of London* 1867: 54. Type locality: [India] Sikkim, Darjeeling.

**Diagnosis.** *Dandirania (D.) pulcherrima* is externally very similar to its partly sympatrically occurring sister species *D. (D.) opulenta*. It can be distinguished from the latter species by its somewhat smaller measures (wingspan 44–50 mm versus 46–56 mm, respectively), narrower forewings with more intense greenish and ochreous-pinkish irroration in the median area, finer double postmedial crossline and narrower yellow median area of hindwing.

The male genitalia (Fig. 15a) differ from those of *D. (D.) opulenta* (Fig. 13c, 14b) by its less dilated and less rectangular arched harpe with longer apical process and the weaker, less densely spinose carinal plate.

In the female genitalia (Fig. 15b), the antrum is narrower and shorter than that of *D. (D.) opulenta* (Fig. 14a,c), the

ductus bursae is slenderer while the appendix bursae is more laterally positioned, small and subconical, and laterally rather strongly scobinate, not rugose-ribbed as in *D. (D.) opulenta*.

**Distribution.** Central and Eastern Nepal (Annapurna Himal, Ganesh Himal); NE India (Sikkim).

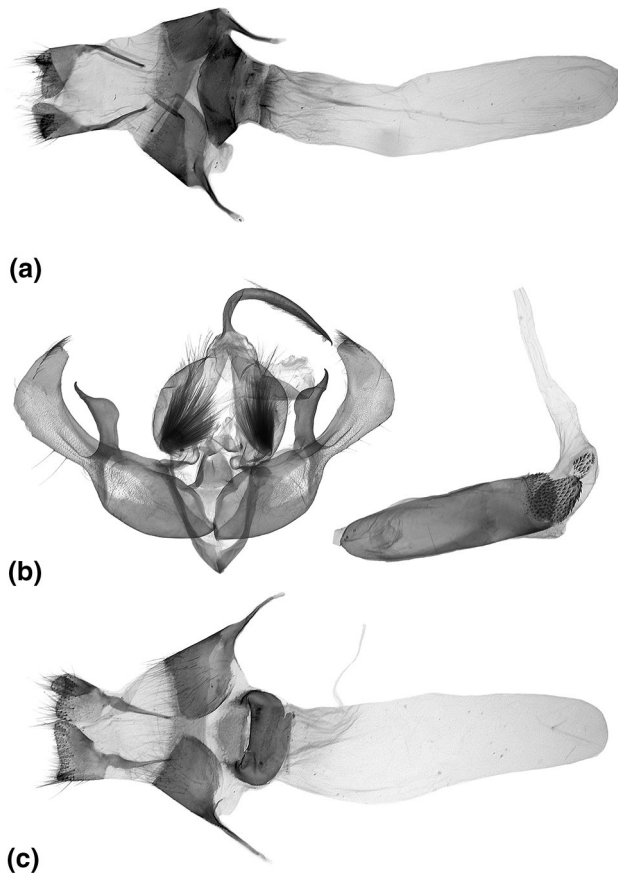
**Note.** The specimen illustrated by Chen (1999) under the name "*Triphaenopsis pulcherrima*" represents most probably *Olivenebula stanegomboci*.

Subgenus *Confectania* subgen. n.

(Figs. 4a,b, 13a,b).

*Confectania* subgen. n. Type species: *Triphaena confecta* Walker, 1858, here designated.

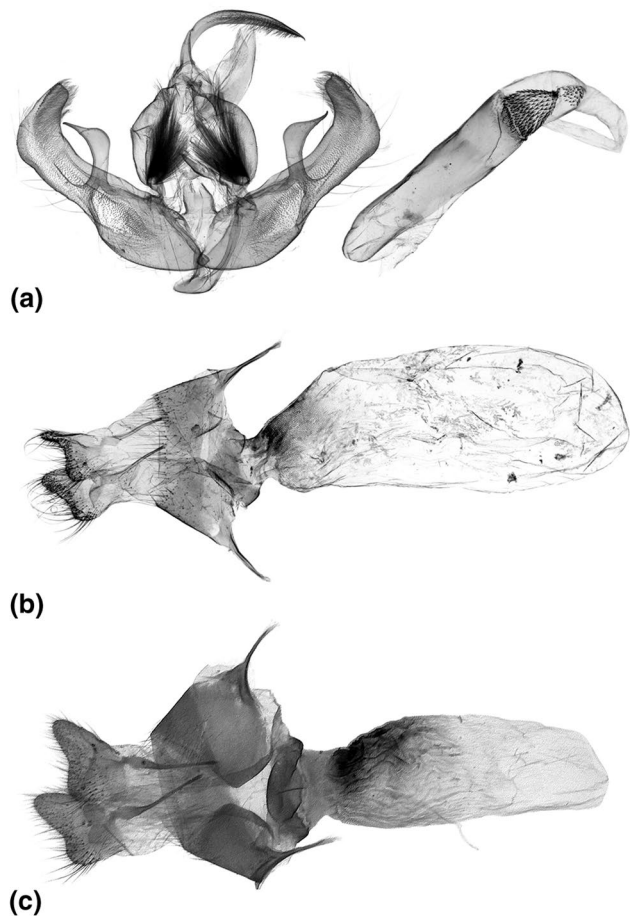
**Taxonomy.** The only species representing this lineage of *Dandirania* displays certain features of the genitalia of both sexes which show the close relationship between *Dandirania* (subgenus *Wallaceania*) and *Olivenebula* and missing from the subgenus *Olivenebula*, while others are shared with the typical members of *Olivenebula*. This



**Figs 14** *Dandirania* spp., genitalia. **a** *D. opulenta opulenta*, female, Pakistan, Murree Hills, slide No.: OP5510f, **b** *D. opulenta schreieri* ssp. n., paratype, male, Nepal, Ganesh Himal, slide No.: RL13521m, **c** ditto, paratype, female, Nepal, Ganesh Himal, slide No.: OP5518f

puzzle-like appearance of morphological characters in the four main lineages of the generic complex could be a consequence of different waves of spreading from secondary speciation centres after the basal splitting of the ancestral species somewhere in the southern Himalayas.

**Diagnosis.** The group features of the subgenus are the short third joints of labial palpi (shared with *Olivenebula* s. str., it is unique within the genus *Dandirania*); the long and distally dilated uncus (shared with *Olivenebula* s. str. and *Wallaceania*); the narrow distal section of valva with large, prominent subapical ventral lobe (autapomorphy); the very short corona (autapomorphy); the distally finely dilated harpe with hook-like apex (shared with *Dandirania*); the presence of large dentate-raduloid sclerotised carinal plate of aedeagus (shared with *Wallaceania*); the small conical ventral diverticulum of vesica subbasally (shared with *Wallaceania*); the narrow, ring-like sclerotised antrum (shared with *Dandirania*); the short, membranous ductus bursae (shared with *Dandirania* and *Olivenebula monticola*); the broad, scobinate appendix bursae (shared with *Dandirania* and *Olivenebula monticola*); and



**Fig. 15** *Dandirania* spp., genitalia. **a** *D. pulcherrima*, male, Nepal, Annapurna Himal, slide No.: RL13085m, **b** ditto, 1867 female, Nepal, Annapurna Himal, slide No.: RL13087f, **c** *D. sramkogabori* sp. n., holotype, female, China, Shaanxi, slide No.: OP5522f

the elliptical ovoid corpus bursae (shared with *Olivenebula* except *monticola*).

**Etymology.** The name of the new subgenus is derived from the name of the type species ("*confecta*") and the generic name ("*Dandirania*").

*Dandirania (Confectania) confecta* (Walker, 1858)

(Figs. 4a,b, 13a,b).

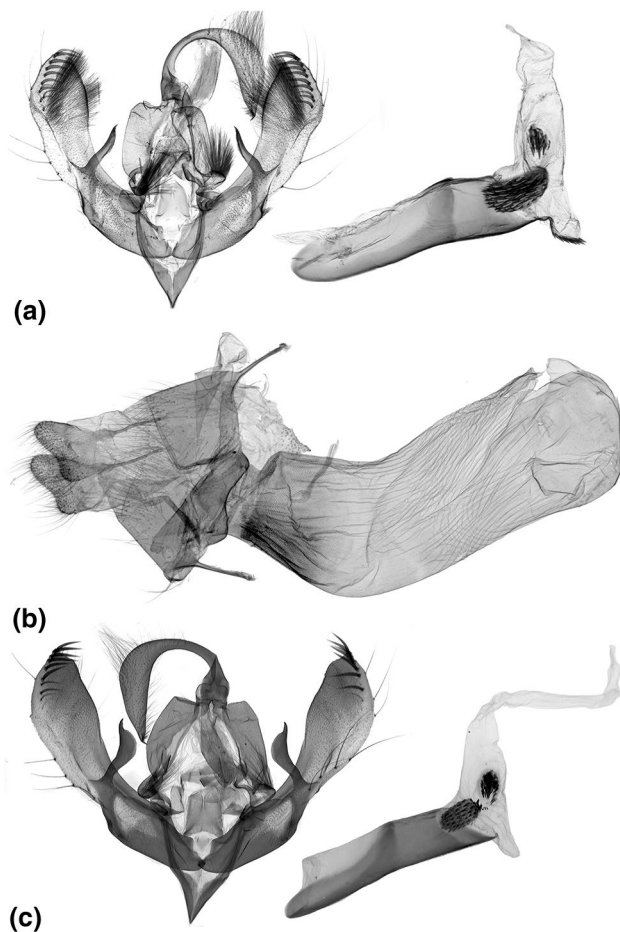
*Triphaena confecta* Walker, 1858, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum* 15: 1705. Type locality: [India] Hindostan.

Synonymy.

*Agrotis hyblaea* Felder and Rogenhofer, 1874, *Reise Fregatte Novara* 2 (Abth. 2)(4): 108, Fig. 6c. Type locality: "Himalayas";

*Eliochoera curtialpis* Butler, 1889, *Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum* 7: 74, pl. 131, Figs





**Fig 16** *Dandirania* spp., genitalia. **a** *D. largeteaui*, male, China, Sichuan, slide No.: RL13039m, **b** ditto, female, China, Sichuan, slide No.: MHNG ENTO 062975 (slide and photograph Bernard Landry), **c** *D. alfredrussellwallacei* sp. n., holotype, male, Nepal, Kanchenjunga Himal, slide No.: OP5506m

7, 8. Type locality: [India, now Pakistan], Dharm-sala.

**Diagnosis.** The species can be distinguished externally from the species of *Dandirania* mostly by its short third joints of palpi; from the *Olivenebula* species by its narrow triangular forewings with dark ground colour and large, ochreous-greenish filled reniform stigma, and the bright orange-yellow hindwings with very broad black(ish) marginal band; Wingspan 38–44 mm.

The genitalia of both sexes (13a,b) cannot be confused with those of any other member of the generic complex; their characterisation and comparison with the other relatives is given under the Diagnosis of the subgenus.

**Distribution.** Western Himalayan. The species is known to occur in the Pakistani and Indian Kashmir, its area extends towards the east to Himachal Pradesh.

**Note.** The specimen illustrated by Chen (1999) under the name "*Triphaenopsis confecta*" represents most probably *Olivenebula oberthuerti thomasbaroni*.

#### Subgenus *Wallaceania* subgen. n.

(Figs. 5e–h, 16a–c).

*Wallaceania* subgen. n. Type species: *Dandirania alfredrussellwallacei* sp. n., here designated.

**Diagnosis.** The synapomorphic features of *Wallaceania* and *Confectania* are the characteristic shape and armature of the aedeagus and vesica with large basal carinal "raduloid" plate and smaller or larger area of stronger but relatively short cornuti on a dorsally upturned and somewhat more inflated main tube of vesica, and with a small sub-basal ventral diverticulum which may be strengthened by a spinose eversible bar of the carina. This structure of the vesica distinguishes these two subgenera from *Dandirania* s. str. which have short, ventrally bent vesica with the two "raduloid" structures and a well-developed spinose carinal plate while the subbasal ventral diverticulum is missing.

The general configuration of the clasping apparatus of *Wallaceania* is conspicuously different from the other two subgenera, resembling rather certain *Olivenebula* species (*O. monticola*, *O. stanegomboci*) than either *Dandirania* s. str. or *Confectania* but have broader distal part of uncus, broader, more quadrangular than triangular juxta, shorter and less regular corona, and not bifurcate but subapically dilated and flattened harpe.

In the female genitalia, the appendix bursae is stronger sclerotised-ribbed than in *Dandirania* s. str. and *Confectania*, and the corpus bursae is more sacculiform than in *Confectania* but shorter and more wrinkled-rugose than in *Dandirania* s. str.

**Distribution.** Himalayan-Sino-Tibetan. The known range of the three *Wallaceania* species covers the southern Himalayas from the Annapurna region to the Kanchenjunga massif, the mountainous areas of Guizhou (Kouy-Tchéou) and the central Chinese mountains in Shaanxi.

**Etymology.** The name of the new subgenus is derived from the name of the type species ("*alfredrussellwallacei*") and the name of the genus ("*Dandirania*").

#### *Dandirania* (*Wallaceania*) *sramkogabori* sp. n.

(Figs. 5c,d, 15c).

**Holotype.** Female, China, Shaanxi, South Taibaishan, Tsinling Mts, Houzhenzi, 1900 m, 107°49'E, 33°53'N, VI.–X.1999, leg. local collector, slide No. OP5522f (coll. G. Ronkay, NHMW).

**Paratype.** China, Shaanxi. Female, South Taibaishan, Tsinling Mts, Houzhenzi, 1600 m, 107°49'E, 33°53'N, 15.VIII.–15.X.1999, leg. local collector, slide No. RL13535f (coll. Gy. Fábíán).

**Diagnosis.** The new species differs externally from *D. (W.) alfredrussellwallacei* by its broader forewings with less laced postmedial line, larger reniform stigma and the more darkened hindwings with rather blackish marginal band, longer inner dark suffusion and narrower medial yellow area; from *D. (W.) largeteaui*, by its broader wings, smaller yellowish patch in and around reniform stigma, less sinuous-laced postmedial line, and the darker lower section of median area. Wingspan 45–46 mm.

The female genitalia of *D. (W.) sramkogabori* (Fig. 15c) differ from those of *D. (W.) largeteaui* (Fig. 16b) by the broader and shorter, more ring-like antrum, the larger and stronger sclerotised, more rugose-ribbed appendix bursae and the shorter sacculiform corpus bursae.

**Distribution.** The new species is known only from the Tsinling Mts (Taibaishan area, Shaanxi) in China.

**Etymology.** The new species is dedicated to Gábor Sramkó (Debrecen, Hungary), molecular phylogeneticist, expert of molecular genetics and phylogeography of plants and animals.

*Dandirania (Wallaceania) largeteaui* (Oberthür, 1881) **stat. rev., comb. n.**

(Figs. 5e,f, 16a,b).

*Polyphaenis largeteaui* Oberthür, 1881, *Études d'Entomologie* 6: 19, pl. 8, f. 4. Type locality: [China, Guizhou], Kouy-Tchéou.

**Diagnosis.** The first recognised species of the subgenus differs externally from *D. (W.) sramkogabori* by its more triangular forewings with large yellow patch covering upper two-thirds of reniform stigma and the area between reniform stigma and upper part of postmedial line, the more laced postmedial line and the absence of the dark suffusion in the lower third of median area; from *D. (W.) alfredrussellwallacei* also by the narrower yellow medial band of the hindwing.

The male genitalia of *D. (W.) largeteaui* (Fig. 16a) can be distinguished from those of *D. (W.) alfredrussellwallacei* by the cucullus having stronger and more regular corona and stronger hair covering, broader medial section of valva, thinner, subapically less dilated harpe, the larger subbasal "raduloid" plate of vesica and the presence of the eversible sclerotised and spinose-dentate ventral carinal bar extending into the subbasal ventral diverticulum.

The female genitalia of *D. (W.) largeteaui* (Fig. 16b) differ from those of *D. (W.) sramkogabori* by the narrower and somewhat longer antrum, the weaker and shorter sclerotisation of appendix bursae and the longer, more longitudinally ribbed corpus bursae.

**Distribution.** Sino-Tibetan. The species occurs in the mountains along the eastern frontier of the Tibetan Plateau in Guizhou Province, China.

*Dandirania (Wallaceania) alfredrussellwallacei* **sp. n.**

(Figs. 5g,h, 16c).

**Holotype.** Male, Nepal, Milke Danda, 3000 m, Gupha Pass, 4.VII.1998, leg. M. Hreblay, slide No. OP5506m (coll. G. Ronkay, NHMW).

**Paratypes.** Nepal, Annapurna Himal. 1 male, Kali Gandaki valley, 2000 m, near Ghasa, 83°39,5'E, 28°36'N, 21.VII.1995, leg. Gy.M. László and G. Ronkay, slide No. RL13086m (coll. G. Ronkay, NHMW). Ganesh Himal. 1 male, 2 km W of Thangjet, 2300 m, 85°17'E, 28°10'N, 21.VII.1995, leg. M. Hreblay and T. Csővári, MHNG ENTO 062977, slide prepared by B. Landry (MHNG).

**Diagnosis.** The new species differs externally from *D. (W.) largeteaui* and *D. (W.) sramkogabori* by its smaller reniform stigma, thinner, less prominently ochreous filled postmedial crossline and broader yellow medial band of hindwing; *D. (W.) largeteaui* by the darkened lower third of median area; from *D. (W.) sramkogabori* also by its shorter, more triangular forewings. Wingspan 40–42 mm.

The male genitalia of *D. (W.) alfredrussellwallacei* (Fig. 16c) can be compared only with *D. (W.) largeteaui* (Fig. 16a). They differ conspicuously in a number of diagnostic features as follows: the corona of *D. (W.) alfredrussellwallacei* is more scarce and weaker than in *D. (W.) largeteaui*, the medial section of valva is more constricted, the harpe is much more dilated and flattened subapically, the two cornuti plates of the vesica are smaller, especially the basal "raduloid" plate is shorter and weaker, and the subbasal ventral diverticulum is entirely membranous while the long, spinose and eversible ventral carinal bar is running to the tip of this diverticulum in *D. (W.) largeteaui*.

**Distribution.** Southern Himalayan. The new species was found in Central and eastern Nepal.

**Etymology.** The name of the Wallace's owlet moth as new species is a tribute to Alfred Russel Wallace on the 200th anniversary of his birth. The "father of zoogeography" studied the richness of nature, analysed the evolution of species here and beyond the Wallace line.

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## Declarations

**Conflict of interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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