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A revision of the “*Valeria*” *dilutiapicata* Filipjev, 1927 species complex, with the description of new genus *Ciboisia* and a new species from China (Lepidoptera, Noctuidae, Psaphidini)

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Abstract: The “*Valeria*” *dilutiapicata* Filipjev species complex is revised and the new genus *Ciboisia* gen. n. is established for this enigmatic psaphidine group. *Euplexia splendida* Sugi, 1958 is transferred to *Ciboisia* and its taxonomic rank is clarified as a species distinct from *C. dilutiapicata*. A third species, *C. vidlickai* sp. n. from China, Shaanxi, is described. The moth and the genitalia of both sexes are illustrated for the three species.

Keywords: *Euplexia*, Amphipyridae, Noctuoidea, Sino-Pacific region.

INTRODUCTION

The species described by Filipjev (1927) as *Valeria dilutiapicata* from the Russian Far East is a peculiar taxon for which the taxonomic position has not been discussed after the Supplement volume of the Seitz Catalogue (Draudt, 1934-1938), until recently (Kononenko, 1979a, b, 2005, 2016; Kishida, 2011; Leley, 2016; Savela, 2023). This fact is even more surprising after the discovery in Japan of an externally rather similar species described as *Euplexia splendida* by Sugi (1958). Sugi placed his species into the Amphipyridae *sensu* Hampson (1908) based on the curious structure of the male genital capsule. Genus *Euplexia* Stephens, 1829 is placed into the Phlogophorini of the Xyleninae (Fibiger *et al.*, 2011); most recently (Zahiri *et al.*, 2013; Regier *et al.*, 2016) the ranks of these suprageneric units were changed to Phlogophorina, Xylenini, Noctuidae. Subsequently, recognising the close relationship of *splendida* with *dilutiapicata*, the former taxon was either synonymised with the latter (Savela, 2023) or considered as a Japanese subspecies of *dilutiapicata* (Kishida, 2011 – as *Valeria dilutiapicata splendida*), but none of these authors changed the generic assignment of these taxa. The discovery of a third species remarkably different externally from both congeners induced a thorough study of the lineage. It showed that the generic placement into *Valeria* Stephens, 1829 is erroneous and that the lineage belongs to the tribe Psaphidini of Amphipyridae,

confirming the original hypothesis of Filipjev (1927). This lineage represents a special clade within the Psaphidini, described below as *Ciboisia* **gen. n.**, while a third species occurring in Shaanxi, China is described as *C. vidlickai* **sp. n.**

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 several internationally important collections (see Abbreviations).

The genital 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% ethanol. The weakly sclerotized structures were stained with eosin red or chlorazol black and then mounted into Euparal.

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

Terminology of genitalia follows Ronkay *et al.* (2011).

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ABBREVIATIONS

Gen. – Genitalia

HNHM – Hungarian Natural History Museum, Budapest, Hungary

MHNG – Muséum d'histoire naturelle, Geneva, Switzerland

NHMW – Natural History Museum, Vienna (Naturhistorisches Museum Wien), Austria

NIAES – National Institute for Agro-Environmental Sciences, Sapporo, Japan [National Agriculture and Food Research Organization (NARO) since 2016]

OP – genitalia slides prepared by Oleg Pekarsky

RL – genitalia slides prepared by László Ronkay

ZISP – Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia

SYSTEMATIC PART

Genus *Ciboisia* gen. n.

Type species: *Valeria dilutiapicata* Filipjev, 1927, here designated.

Diagnosis: The new genus possesses a number of autapomorphic features in the male genitalia (Figs 1, 3, 5) which cannot be found in the related Psaphidini genera. The most characteristic of these is the bifurcate, heavily sclerotised harpe (clasper)-digitus complex. Its main plate is fused from the long basal plate of the harpe (clasper) running from the ventral edge of the sacculus along the ventral margin of the valva to the proximal part of the cucullus and the sclerotised costa and its flattened, plate-like digitus while the erect part of the harpe (clasper) is also heavily sclerotised, long and apically acute, straight or slightly arched, projecting beyond the costal margin. Other apomorphic features of the clasping apparatus are the dense, long hairbrushes of the medial and apical (posterior) sections of the tegumen and the well-developed, flattened, flap-like clavus.

The configuration of the vesica is also strongly autapomorphic. The presence of the claw- or bill-like subbasal cornutus in the inner curve and the long, heavily sclerotised crest-like structure are unique within the Asiatic Psaphidini although a somewhat similar flattened terminal sclerotised plate is present in certain *Meganephria* Hübner, 1820 and *Belosticta* Butler, 1879 species (see Ronkay *et al.*, 2011, Gen. figs 84-86, 93-99). The long sclerotised-spinose ribbon forming the eversible part of the carina penis is typical of several psaphidine genera while the concentration of long spiniform cornuti into a common, variably long brush in the medial section of the main tube of the vesica is another generic apomorphy.

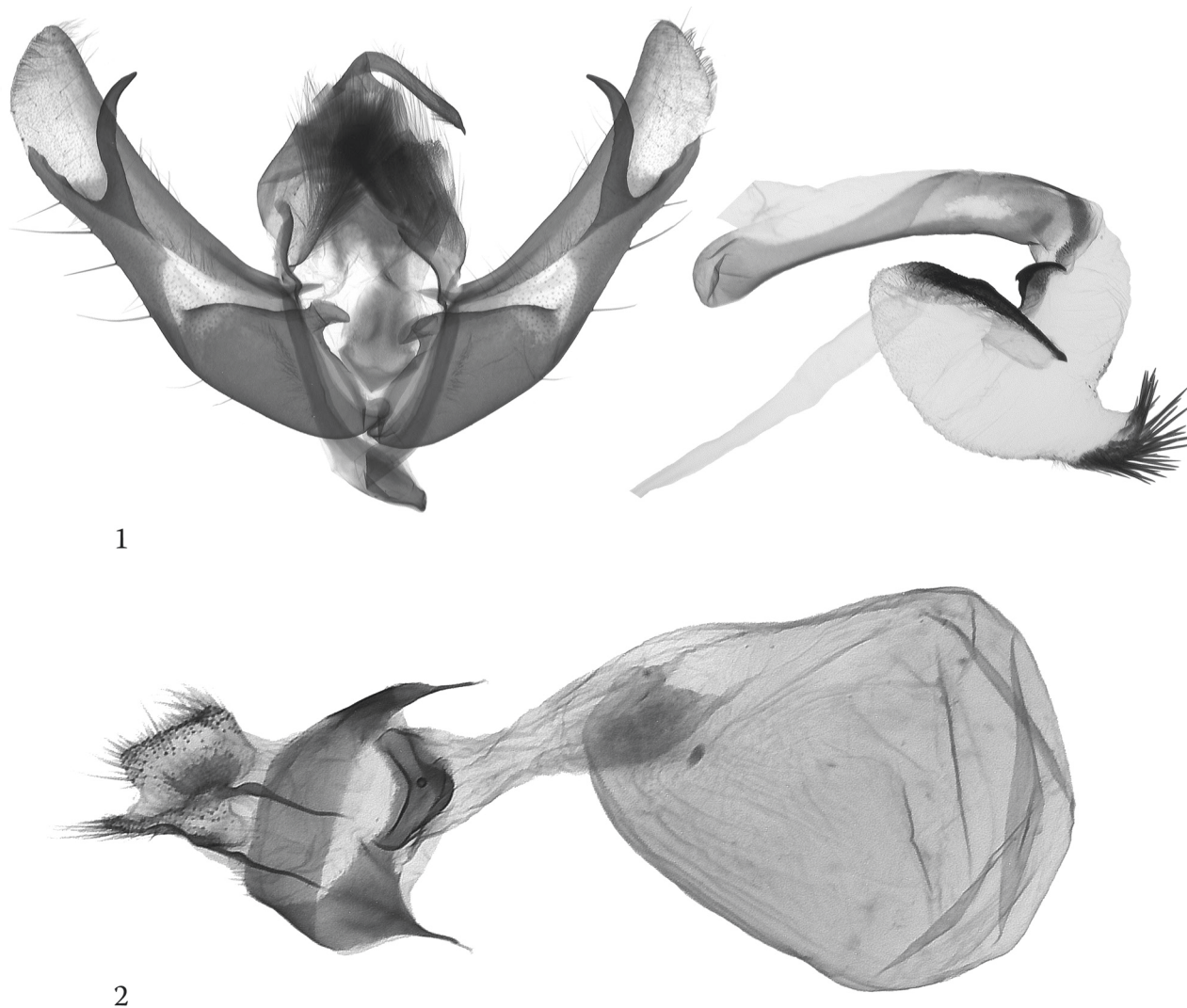
The external appearance of the three species of the genus is also distinctive (Figs 6-13) and cannot be confused either with *Valeria* or other psaphidine taxa. The dark blackish-

grey ground colour lacking the greenish suffusion being typical of most *Valeria* species (see Ronkay *et al.*, 2011), the rather quadrangular, clear white/grey-white reniform stigma, and the white tornal section of the postmedial line followed by a bronze-reddish tornal patch are diagnostic features of the genus. The scale cover of the head and thorax is less thick and homogeneous than in *Valeria*, the collar, tegulae, and metathoracic tuft are more distinct; the abdomen is slenderer and proportionally longer, with large tufts of scales forming a dorsal crest. The clear white hindwing with weak or subtle marginal area, finely dotted submarginal line, and small discal spot are shared features of *Ciboisia* and *Valeria* while the shortly dentate male and minutely dentate female antennae are shared by the two eastern Asiatic *Valeria* species also (the European and western Asiatic *Valeria* taxa have broadly bipectinate male and shortly bipectinate female antennae).

The female genitalia of *Ciboisia* are rather simplified (Figs 2, 4) and display shared features with the typical (western Palaearctic) *Valeria* species, *V. oleagina* (Denis & Schiffermüller, 1775) and *V. jaspidea* (de Villers, 1789) though the sclerotised plates of the antrum are remarkably larger and stronger while the sclerotisation of the appendix bursae is much weaker (see Ronkay *et al.*, 2011, Gen. figs 75-77). The female genitalia of *Ciboisia* differ from those of the two eastern Palaearctic species, *V. tricristata* Draudt, 1934 and *V. exanthema* (Boursin, 1955) by the quadrangular papillae anales, the calyciform antrum, the much longer and membranous ductus bursae, the elliptical-ovoid corpus bursae, and the distally positioned appendix bursae (the corpus bursae of the two western Palaearctic *Valeria* species is much longer, sacculiform, with wide zones of sclerotised wrinkles and ribs and rather foot-shaped fundus; see Ronkay *et al.*, 2011, Gen. figs 78, 79). In *Flexivaleria* Ronkay, Ronkay & Gyulai, 2011, the papillae anales are much larger and more weakly sclerotised than in *Ciboisia*, the antrum and the ductus bursae are thinner, the corpus bursae is long, saccate and the appendix bursae is positioned medio-laterally (Ronkay *et al.*, 2011, Gen. fig. 83).

The genus includes three closely related species, *C. dilutiapicata* (Filipjev, 1927) **comb. n.**, *C. splendida* (Sugi, 1958) **comb. n., stat. rev.**, and *C. vidlickai* **sp. n.** The three species are easily distinguished by their external features while the differences in the genitalia are rather small. This phenomenon is also typical of the related *Valeria*, *Meganephria*, and *Belosticta* species where the specific differences between the genitalia of the closely allied taxa are often small or even subtle while the adults are clearly separable by their habitus.

Bionomics and distribution: The genus has a Sino-Pacific range, extending from the Central Chinese mountains (China: Shaanxi) to the Russian Far East (Amur valley, Ussuri region, Primorye) and Japan (Honshu, Kyushu). The three species appear to be allopatric and rather stenochorous.



Figs 1-2. *Ciboisia dilutiapicata* (Filipjev, 1927). (1) male genitalia (ventral view, OP5193m, Far East, Primorye. (2) female genitalia (dorsal view), OP5194f, Far East, Primorye.

The adults of *Ciboisia* are members of the early spring fauna, with moths on the wing in April-May. They occur in the medium-high montane woodlands and are attracted to light. The moths have a relatively short functional proboscis, but otherwise well-developed, therefore they should be active feeders.

Etymology: This new genus is dedicated to ornithologist Alice Cibois, Head of the Vertebrates Sector and ad-interim Head of Research and Collections at the Muséum d'histoire naturelle, Geneva, for her support and for her work in promoting taxonomy as President of the Swiss Systematics Society between 2014 and 2019.

***Ciboisia dilutiapicata* (Filipjev, 1927) comb. n.**

Figs 1, 2, 6-8

Valeria dilutiapicata Filipjev, 1927, *Bulletin of the Zoological Museum, USSR Academy of Sciences* 28: 244. Type locality: Russian Far East, Sutchan district, Tigrovoe village. Holotype: female, in coll. ZISP.

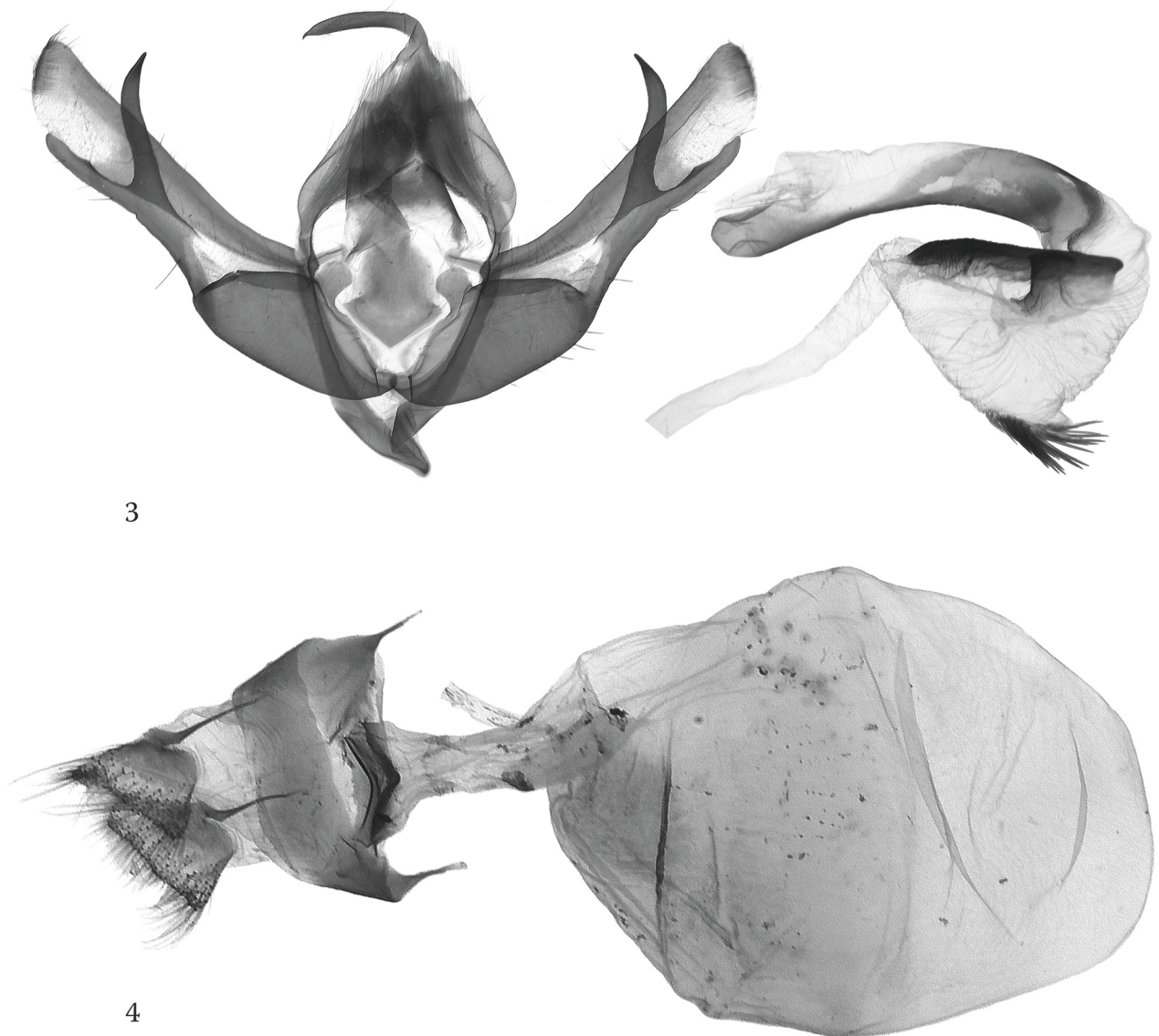
Type material examined: Colour images of the undissected holotype with the following labels: “Suchansky rayon |, s. Tigrovoe | 25 - 1922 | A. Kurentzov” (in Cyrillic letters); “Valeria ♀ | dilutiapicata Fil | N. Filipjev det. | type”; a label with three glued legs and a small dark brown, round label without written information. The specimen is photographed under the reference number INS_LEP_0000257 and shown in the collection homepage of the ZISP (Sinev & Matov, zin.ru/collections/Lepidoptera/index_en.html).

Diagnosis: *Ciboisia dilutiapicata* (Figs 6-8) can be distinguished from the Japanese *C. splendida* (Figs 9-12) by its more elongated forewings with more greyish irrorated white(ish) reniform stigma and large whitish-grey apical-subapical patch extending from the apex to the cubital veins in the marginal area and to the lower edge of the reniform stigma through the postmedial line. The postmedial line has a characteristic curve toward the tornus which is missing in *C. splendida*. The ground colour of the forewing is somewhat paler than in *C. splendida* and the bronze-reddish tornal patch is less prominent. The abdomen is paler grey, the tufts of the dorsal crest are also lighter, and the hindwing marginal area is broader than in the Japanese species.

Ciboisia dilutiapicata is separable from *C. vidlickai*

(Fig. 13) by its more sharply defined upper section of the postmedial line, clearly visible subterminal line, and the characteristic curve of the postmedial line above the inner margin, the more sharply marked outline of the reniform stigma, and the less prominent bronze patch before the tornus. Wingspan: 37-40 mm.

The male genitalia of *C. dilutiapicata* (Fig. 1) differ from those of *C. splendida* (Fig. 3) principally by the configuration of the vesica: its sclerotised crest-like structure is shorter and thinner, not evenly broad and long as in *C. splendida*, its distal half is more elliptical, and the medial fascia of cornuti is situated on a more pronounced lateral diverticulum. The clasping apparatuses are very similar, but the erect part of the harpe-complex is thinner and more arched in *C. dilutiapicata*. The main differences between the male genitalia of *C. dilutiapicata*



Figs 3-4. *Ciboisia splendida* (Sugi, 1958). (3) male genitalia (ventral view), OP5200m, Japan, Nagano Prefecture. (4) female genitalia (dorsal view), OP8209f, Japan, Yamanashi Prefecture.

and *C. vidlickai* (Fig. 5) can be found in the shape of the uncus (which is straight and evenly slender towards the apical hook in *C. dilutiapicata* while that of *C. vidlickai* is medially slightly curved and distally dilated) and that of the distal half of the vesica which is larger and more elongate-elliptical in *C. dilutiapicata*, the sclerotised crest is longer, and the diverticulum bearing the fascia of cornuti is more pronounced laterally than in *C. vidlickai*. The female genitalia of *C. dilutiapicata* (Fig. 2) can be compared only with those of *C. splendida* (Fig. 4) as the female of *C. vidlickai* is unknown. The two species are very similar in that respect, but the sclerotised plates of the antrum of *C. dilutiapicata* are broader and more calyciform.

Bionomics and distribution: The species inhabits the humid deciduous woodlands of the Russian Far East (Amur region, Primorye territory). It appears to be localised and rare. The early stages and foodplant are unknown.

The proper distribution of *C. dilutiapicata* is incompletely known, partly due to the amalgamation of the different populations into a common taxon. Thus, the range of the species is mentioned in the recent literature (Dubatolov & Dolgikh, 2009; Kononenko, 2005, 2016; Leley, 2016) to be extending from the Russian Far East to Japan and China. It is clear that the Japanese records refer to *C. splendida*, but the Chinese record(s) cannot be assigned to either *C. dilutiapicata* or *C. vidlickai* as no proper locality data are given. Interestingly, the species “*dilutiapicata*” is missing from the latest Chinese catalogues (Chen, 1999; Hua, 2005) and it is therefore

questionable whether the above-mentioned data refer to *C. dilutiapicata* (e.g., from Manchuria) or to a population of *C. vidlickai*.

Note: The sex of the holotype specimen is incorrectly mentioned on the homepage of the ZISP (Sinev & Matov, zin.ru/collections/Lepidoptera/index_en.html) as “male”; it is a female as written on the label of the holotype.

***Ciboisia splendida* (Sugi, 1958) stat. rev., comb. n.**

Figs 3, 4, 9-12

Euplexia splendida Sugi, 1958, *Tinea* 4(1): 190, pl. 25, f. 15.

Type locality: Japan, Nagano prefecture, Karuisawa.

Holotype: male, in coll. NIAES.

Type material examined: The colour images of the undissected holotype, with labels as follows: “Karuisawa | 4 May, 1956 | S. SUGI”, “Shigero Sugi Collection”, “HOLOTYPE | *Euplexia splendida* SUGI | 1956” (red label) (coll. NIAES).

Diagnosis: *Ciboisia splendida* (Figs 9-12) differs externally from *C. dilutiapicata* (Figs 6-8) by its broader triangular forewings with a darker, most often blackish-grey ground colour, the absence of the pale grey area in the upper part of the marginal field, the more prominent reniform stigma, the only slightly sinuous lower section of the postmedial line without the larger curve above the inner margin, the bright bronze-brown tornal patch, and the shining milky white hindwing with weaker marginal suffusion. It can be

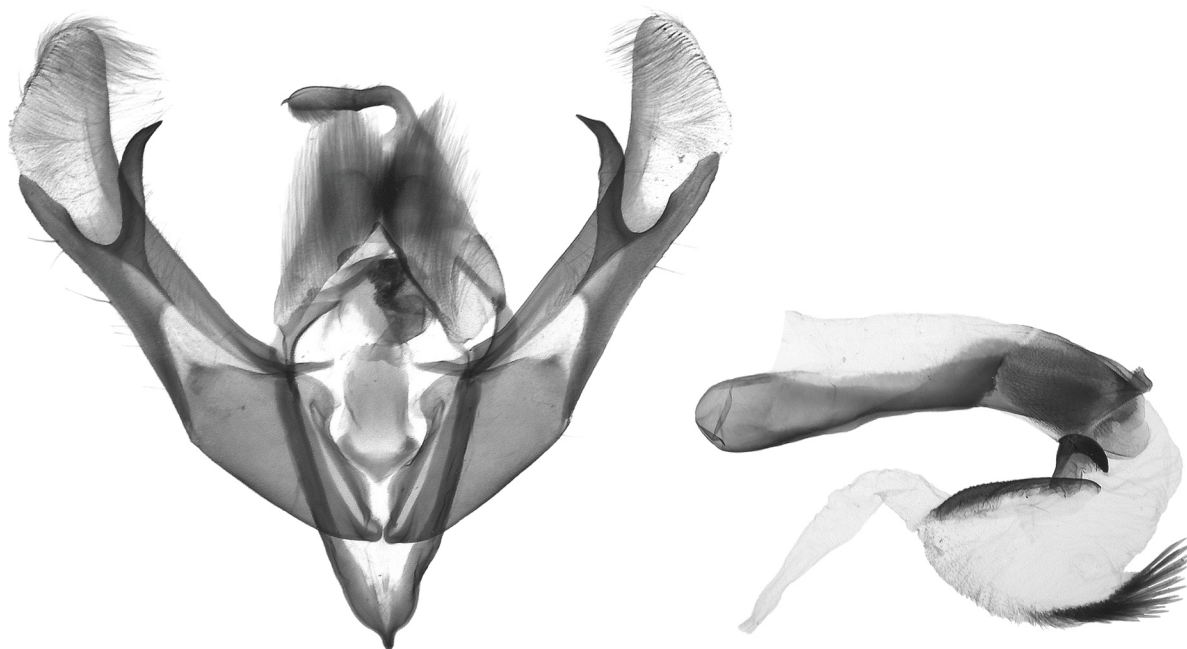
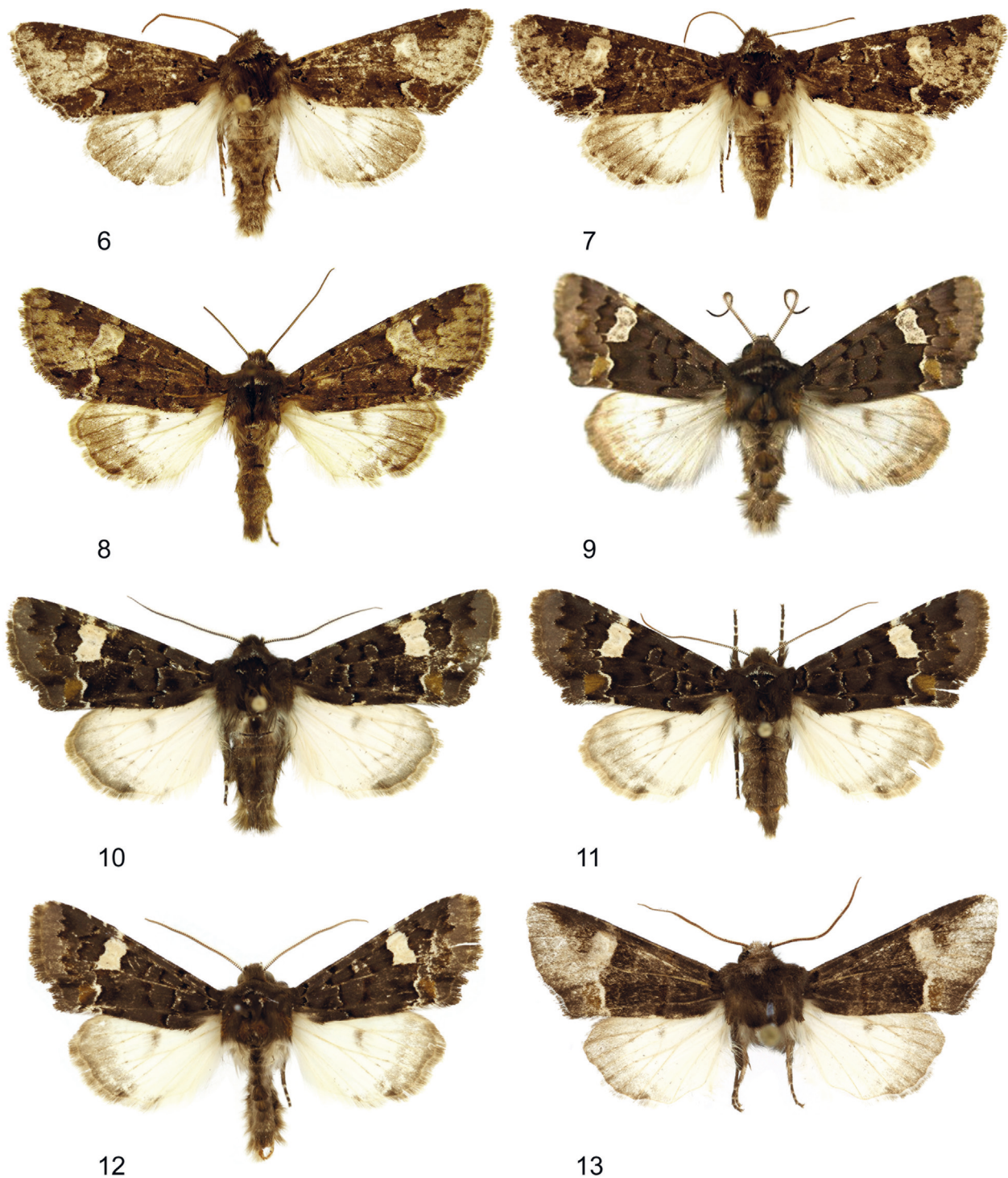


Fig. 5. *Ciboisia vidlickai* sp. n., male genitalia, RL13421m, holotype, China, Shaanxi.



Figs 6-13. *Ciboisia* species, habitus. (6) *C. dilutiapicata* (Filipjev, 1927), ♂, Far East, Primorye (wingspan 39 mm). (7) *C. dilutiapicata*, ♀, Far East, Primorye (wingspan 40 mm). (8) *C. dilutiapicata*, ♂ holotype, Far East, Ussuri Region (wingspan 38 mm). (9) *C. splendida* (Sugi, 1958), ♂ holotype, Japan, Nagano Prefecture. (10) *C. splendida*, ♂, Japan, Nagano Prefecture (wingspan 40 mm). (11) *C. splendida*, ♀, Japan, Yamanashi Prefecture (wingspan 37 mm). (12) *C. splendida*, ♂, Japan, Gunma Prefecture (wingspan 36 mm). (13) *C. vidlickai* sp. n., ♂, holotype, China, Shaanxi (wingspan 37 mm).

distinguished from *C. vidlickai* (Fig. 13) by the absence of pale scaling in the upper area of the marginal field (it is pale ash-grey in *C. vidlickai*), the well-visible subterminal line, the much more sharply defined reniform stigma, and the more sinuous lower half of the postmedial line. Wingspan: 36-40 mm.

The male genitalia of *C. splendida* (Fig. 3) differ from those of *C. dilutiapicata* (Fig. 1) and *C. vidlickai* (Fig. 5) by the much stronger and broader sclerotised crest and the rather conical distal section of the vesica, the straighter erect part of the harpe-complex and the broader clavi; from *C. vidlickai* also by the differently shaped uncus.

The female genitalia of *C. splendida* (Fig. 4) and *C. dilutiapicata* (Fig. 2) are very similar, but the Japanese species has narrower and more angular sclerotised plates of antrum, with a weaker postero-medial cleft.

Bionomics and distribution: *Ciboisia splendida* is a Japanese endemic that occurs in the medium-high mountainous areas of Honshu and Kyushu.

Ciboisia vidlickai sp. n.

Figs 5, 13

Holotype: Male, China, Prov. Shaanxi, Tsinling Mts, Foping Nature Reserve, 1600 m, 107°57'E, 33°51'N, 20.IV.-11.V.1999, leg. V. Siniaev & A. Plutenko; slide No. RL13421m (coll. G. Ronkay, NHMW).

Diagnosis: The new species (Fig. 13) is easily distinguishable from the other two congeners (Figs 6-12) by the unicolorous dark blackish grey forewings with reduced crosslines except for the almost straight, white lower part of the postmedial crossline and the diffuse outlines of the whitish-grey reniform stigma. The pale area is present in the upper marginal field, but it is strongly unicolorous ashy grey and not divided by the subterminal line as in *C. dilutiapicata*, while this patch is missing in *C. splendida*. Wingspan: 37 mm.

The diagnostic features of the male genitalia of *C. vidlickai* (Fig. 5) are the medially arched and distally dilated uncus (both congeners have a straight and evenly wide uncus), and the smallest, elliptical distal section of the vesica; the sclerotised crest is also shorter than in the other two *Ciboisia* species.

Bionomics and distribution: The new species is known from its unique holotype which was collected at light in a large monsoonic deciduous forest reserve at medium-high altitude in the Tsinling Mountains (China, Shaanxi).

Etymology: The new species is dedicated to the enthusiastic entomologist Dr Lubomir Vidlicka (Bratislava, Slovakia), editor of the journal *Entomofauna Carpathica*.

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