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New lichen-moth taxa (Lepidoptera, Arctiidae, Lithosiinae) from Vietnam

Новые таксоны чешуекрылых-лишайниц (Lepidoptera, Arctiidae, Lithosiinae) из Вьетнама

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Ключевые слова: чешуекрылые, лишайницы, новый вид, Вьетнам, Lepidoptera, Arctiidae, Lithosiinae.

Abstract. 17 new species of lichen-moths are described from Vietnam. *Collita vietnamica* **sp.n.** is similar to *C. digna* Ign. et Witt, but differs by presence of only two cornuti. *Teulisna tongdzuythanhi* **sp.n.** and *T. flava* **sp.n.** are similar to *T. steineri* Holloway but differ by differently elongate sacculus apices. *Katha pseudobrevivalva* **sp.n.** is externally similar to *K. brevivalva* Holloway; differs by upturned sacculus apex. *Mithuna tranthieudui* **sp.n.** is characterized by a presence of small notch at the valve apex, as well as by presence of a strongly sclerotized and apicaly bifurcated apical process of the aedeagus. *Adites thanhi* **sp.n.** differs from related species by dark forewings and presence of two apical spines on the valve apex. *Pseudomiltochrista zolotuhini* **gen.** et **sp.n.** is characterized by yellow wings with rose veins and a submarginal ziczag line; male genitalia structure is similar to *Barsine–Miltochrista–Lyclene* genera; differs by presence of an additional medial process on the sacculus, an apical process of juxta and a row of strong cornuti on vesica. *Aemene zolotuhini* **sp.n.** has short quadrangular valves with two apical processes. *A. annamica* **sp.n.** is characterized by presence of two equal apical processes on the valve, as well as an apical process of the sacculus, directed upwards. *Macaduma kontumica* sp. n. differs from other species of the genus by an evenly rounded external wing margin; *M. micra* **sp.n.** is noticeably smaller than the similar *M. tortricella* Wlk., differs by a reduction of the hind apical process of the right valve. *Eugoa annamica* sp. n. is similar to *E. gabrielae* Bucsek (*E. aequalis* species group) by the wing pattern and genitalia structure but differs by absence of strong spines on the lateral processes of the tegumen. *Eugoa zolotuhini* **sp.n.** is similar to *E. bipunctata* Wlk. by the wing pattern and male genitalia structure but the valve apex has two short processes. *Eugoa kuznetzovi* **sp.n.** is similar to *E. bipunctalis* van Eecke by the male genitalia but the subapical valve process is curved like a crescent. *Trischalis nigrobrunnea* **sp.n.** differs from al other species of the genus by unicolorly dark wings. *Neoduma songensis* **sp.n.** is characterized by presence of two straight processes on the valve apex. *Diduga cucphuonga* **sp.n.** differs from other species of the genus by a club-shaped valves covered by several chetae.

Резюме. Описываются 17 новых видов из Вьетнама. *Collita vietnamica* **sp.n.** близок к *C. digna* Ign. et Witt, отличается наличием только двух корнутусов. *Teulisna tongdzuythanhi* **sp.n.** и *T. flava* **sp.n.** близки к *T. steineri* Holloway, отличаются вытянутой в разной мере вершиной саккулюса. *Katha pseudobrevivalva* **sp.n.** внешне похож на *K. brevivalva* Holloway, но отличается загнутыми вверх вершинами саккулюса. *Mithuna tranthieudui* **sp.n.** характеризуется наличием небольшой вырезки на вершине вальвы, а также наличием мощного склеротизованного и раздвоенного на вершине отростка на вершине эдеагуса. *Adites thanhi* **sp.n.** отличается от видов рода тёмными передними крыльями и наличием двух зубцов на вершине вальв. *Pseudomiltochrista zolotuhini* **gen.** et **sp.n.** характеризуется жёлтыми крыльями с розовыми жилками и предкраевой зигзаговидной полосой; по строению генитального аппарата относится к группе родов *Barsine–Miltochrista–Lyclene*, отличаясь наличием дополнительного срединного отростка на саккулюсе, апикальным выступом на юксте и серией крупных корнутусов на везике эдеагуса. У *Aemene zolotuhini* **sp.n.** вальвы короткие, с двумя апикальными отростками. *A. annamica* **sp.n.** характеризуется раздвоенными на вершине вальвами с равными по длине отростками, а также наличием направленного вверх отростка на вершине саккулюса. *Macaduma kontumica* **sp.n.** отличается от всех видов рода округлённым внешним краем передних крыльев; *M. micra* **sp.n.** заметно меньше похожей на неё *M. tortricella* Wlk., но отличается заметной редукцией нижнего вершинного отростка правой вальвы. *Eugoa annamica* **sp.n.** по рисунку крыльев и строению вальв близок к *E. gabrielae* Bucsek из группы *E. aequalis* Wlk., отличаясь отсутствием крупных зубцов на боковых отростках тегумена. *Eugoa zolotuhini* **sp.n.** по строению гениталий и рисунку крыльев близок к *E. bipunctata* Wlk., но вершина вальвы с двумя короткими отростками. *Eugoa kuznetzovi* **sp.n.** по строению гениталий близок к *E. bipunctalis* van Eecke, но субапикальный отросток вальв серповидно изогнут. *Trischalis nigrobrunnea* **sp.n.** отличается от всех видов рода одноцветными чёрно-коричневыми крыльями.

Neoduma songensis **sp.n.** характеризуется наличием двух прямых отростков на вершине вальв. *Diduga cucphuonga* **sp.n.** отличется от других видов рода булавовидными вальвами, несущими на вершине хеты.

Introduction

Lithosiinae from Vietnam were firstly described in several old articles by Candèze [1927] and de Joannis [1928, 1930]. During last decades, new material has been collected in Vietnam containing many new species. Some of them were described not long ago [Dubatolov, 2013]. In 2012, Dr. V.V. Zolotuhin collected a considerable number of lichen-moths during his two expeditions to Vietnam; besides, some lichen-moth specimens he collected earlier, in 2006. The holotypes of species collected by V.V. Zolotuhin are deposited in Siberian Zoological Museum, Institute of Systematics and Ecology of Animals, Novosibirsk, Russia. One new species was collected by Dr. V.I. Kuznetzov in 80-th, and it is deposited in Zoological Institute, St.-Petersburg, Russia.

Lithosiina

Collita vietnamica Dubatolov et Bucsek, **sp.n.**

Figs 1, 19.

Material. Holotype — ♂, **North Vietnam**, Thanh Hoa Prov., Thuong Xuan Distr., Xuan Lien NR [National Reserve], anthropog. [enic landscape], 19°52' N, 105°14.28' E, 130 m, 1–2.XII.2012, V. Zolotuhin leg.

Description. Male (Fig. 1). Forewing length 13 mm. Forewing shape and coloration like in similar *C. griseola* (Hübner, [1803]), *C. vetusta* (Walker, 1854) and *C. digna* (Ignatyev et Witt, 2007). They are unicolorously gray with a diffuse lightening along costal margin in basal part of the wing. Hindwings are unicolorly light yellow. Male genitalia (Fig. 19): uncus with a small spine at tip; valves asymmetrical, each valve with a wide triangular process on ventral side, but on the left valve it is situated more distally than on the right one; valve edge between triangular process and sacculus apex slightly serrate. Juxta apex twice shorter that the main part of juxta. Aedeagus wide, narrower and more sclerotized at apex; vesica with two oval cornuti centered with small spines and with large scobinated areas.

Remarks. The genus *Collita* Moore, 1878, with the type species *C. griseola* (Hübner, [1803]), for the long time was considered as a species group or a subgenus in the dissimilar genus *Eilema* Hübner, [1819] [Witt et al., 2011]. Several years ago *Collita* was raised to the generic rank [Dubatolov, Zolotuhin, 2011] based on differences in the male genitalia structure, as it was originally stated by F. Moore [1878]. Ignatyev and Witt [2007] prepared the comprehensive review of this group and stated seven strictly Palearctic species: the Transpalearctic *C. griseola* (Hübner, [1803]), *C. vetusta* (Walker, 1854) from southern regions of the Far Eastern Russia, Korea, Northern China (Shanghai west to Ordos in Ih Ju Meng of Nei Mongol), and Japan; *C. coreana* (Leech, 1888) from Korea and neighbouring territories of the Far Eastern Russia; *C. gina* (Okano, 1955) from Japan, *C. okanoi* (Inoue, 1961) from Japan and Southern Kurile Islands, *C. digna* (Ignatyev et Witt, 2007) from southern regions of the Far Eastern Russia (Primorskii Krai and vicinity of Khabarovsk) and Northern China (Beijing) (including subsequent additions by V. Dubatolov et A. Dolgikh [2011] and V. Dubatolov [2014]), and *C. chinensis* (Daniel, 1954) from Central China (Shanxi, Shaanxi and Bayan Nur Meng of Nei Mongol; probably also Heilongjiang, according to N. Ignatyev and Th. Witt [2007]). So, the southernmost localities for *Collita* species in China are as follow: *C. vetusta* Wlk. from Shanghai [Ignatyev, Witt, 2007] and Ordos [Dubatolov, 2014], *C. chinensis* Dan. from Shaanxi (Tapaishan) and Shanxi (Mien-Shan) [Daniel, 1954]. According to personal communication by V. Zolotuhin, N. Ignatyev studied all available *Collita* material in European collections. Nevertheless, Fang [2000] recorded «*Eilema griseola*» (so, these references should be transferred into *Collita*) from different provinces of China: Heilongjiang and Jilin (should be a mix of *C. griseola* Hb., *C. vetusta* Wlk., *C. digna* Ign. et Witt), Liaonin, Beijing, Shandong (should be a mix of *C. vetusta* Wlk. and *C. digna* Ign. et Witt), Shanxi, Shaanxi, Gansu (*C. chinensis* Dan.), Anhui, Zhejiang, Jiangxi, Hunan, Guangxi, Sichuan and Yunnan (most probably, *C. vetusta* Wlk.). So, according to the data by Fang [2000], some incorrectly identified (but probably belonging to *C. vetusta* Wlk.) populations from Sichuan, Yunnan, Guangxi, Hunan and Zhejiang might be considered as extra-Palearctic.

It is impossible to distinguish the new species from four siblings: *C. griseola* Hb., *C. vetusta* Wlk., *C. chinensis* Dan., and *C. digna* Ign. et Witt by external characters. Only the male genitalia structure is characteristic for the new species. The shape and position of the wide triangular processes on the ventral valve edges are similar to those of *C. chinensis* Dan. and *C. digna* Ign. et Witt [Ignatiev, Witt, 2007: 32, Fig. 34–35] but the length of the apical process on the juxta is small like in *C. digna* Ign. et Witt. However, the last species has more cornuti on the vesica, typically 4–7, rarely only three; in addition, these cornuti are centered by larger spines in *C. digna* Ign. et Witt and *C. chinensis* Dan. but by small spines in the new species. The aedeagus apex bears small apical tip in *C. digna* Ign. et Witt and *C. chinensis* Dan. that is absent in the new species.

Teulisna tongdzuythanhi Dubatolov et Bucsek, **sp.n.**

Figs 2, 3, 21.

Material. Holotype — ♂, **Central Vietnam**, Vinh Phuc Prov., Tam Dao, 21°27' N, , 105°38.37' E, 900 m, 26–28.III.2912, V.V. Zolotuhin. Paratypes: 3♂♂, 4♀♀, the same locality as in the holotype; 3♂♂, 9♀♀, N. Vietnam, Cao Bang Prov., Phia Oak Mts., Phia Den vill.[age], 1030 m, 22°34' N, 105°52' E, 12–16.XI.2012, V.V. Zolotuhin leg.

Description. Male (Fig. 2). Forewing length 11 mm. Forewings light brown with darker brown spots at hind edge, about 1/3 from base, and at costal edge: at middle and near apex; additional submarginal spot visible between veins M_3 and Cu_1. Several diffuse dark brown dots between veins at external edge. Hindwings yellow. Male genitalia (Fig. 20): uncus narrow, long, broadened at base; valves asymmetrical: right one is 1/5 longer and twice wider than left one; both valves broadened distally; cucullus apex rounded, subapically with a small plate on innerside; sacculus apex triangular and curved upwards; saccus roundly trapezoidal; aedeagus straight, vesica with one strong cornutus. Female (Fig. 3). Forewing length 12 mm. Forewing pattern better expressed than in male: additional transversal brown medial line is angled at cell hind vein. Female genitalia (Fig. 21): ductus bursae sclerotized, flat, bursa copulatrix oval, without any signa, with strong and rigid appendix, on a dorsal side behind ductus; this appendix is nearly equal to bursa main body.

Remarks. By the wing pattern and male genitalia structure the new species is similar to the single hitherto known species of the genus, *Teulisna steineri* Holloway, 2001 from

Malakka and Borneo, but the latter one has less asymmetrical valves and the left valve is slightly wider and broader than the right one; additionally it has no cornutus on vesica [Holloway, 2001: 220, Fig. 72]. Another new species of the group, *T. flava* sp.n. has yellow (not light brown) wings and different male genitalia structure.

The species is named in honour of Prof. Tong Dzuy Thanh, a paleontologist from Vietnam, Dubatolov father's friend during the first author's childhood.

Teulisna flava Dubatolov et Bucsek, **sp.n.**

Figs 4, 22.

Material. Holotype — ♂, **North Vietnam**, Thanh Hoa Prov., Thuong Xuan Distr., Xuan Lien NR [National Reserve], anthropog.[enic landscape], 19°52' N, , 105°14,28' E, 130 m, 29–30.XI.2012, V.V. Zolotuhin leg. Paratype: 1♂, N. Vietnam, Cao Bang Prov., Phia Oak Mts., Phia Den vill.[age], 1030 m, 22°34' N, 105°52' E, 12–16.XI.2012, V.V. Zolotuhin leg.

Description. Male. (Fig. 4). Forewing length 9 mm. Forewings yellow, with two light brown spots at costal edge: at middle and subapical one; hindwings light yellow. Male genitalia (Fig. 22): uncus moderate in length and width; valves asymmetrical: right one slightly longer and 1.5 wider than left one; both valves broadened distally; cucullus apex slightly angular at apex, subapically with a broad plate on inner side; sacculus apex with a strongly hook directed upwards, the right one is 1.5 times longer; saccus roundly rectangular and concave apically; aedeagus straight and short, vesica with one strong cornutus. Female unknown.

Remarks. The new species is the only in the *T. steineri* group with yellow wings. Among the two other species of the group, *T. steineri* Holloway, 2001 has bulbous sacculus apices [Holloway, 2001: 220, Fig. 72], while in *T. tongdzuythanhi* sp. n. sacculus apices are triangular, not hooked upwards.

Katha pseudobrevivalva Dubatolov et Bucsek, **sp.n.**

Figs 5, 23.

Material. Holotype — ♂, North Vietnam, Thanh Hoa Prov., Thuong Xuan Distr., Xuan Lien NR [National Reserve], anthropog.[enic landscape], 19°52' N, 105°14,28' E, 130 m, 29–30.XI.2012, V.V. Zolotuhin leg. Paratypes: 1♂, Central Vietnam, Gia Lai Prov. Kon Ka Kinh NP [National Park], 14°182.862' N, 108°29.684' E, 820 m, 12–13.III.2012; 1♂, Central Vietnam, Gia Lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 14°42.602' N, 108°39.062' E, 1050 m, 14–19.III.2012; 2♂♂, N. Vietnam, Bac Giang Prov., Son Dong Distr., Tay Yen Tu NR, cite 1, 21°11' N, 106°43' E, 180 m, 22–25.XI.2012; 2♂♂, N. Vietnam, Thanh Hoa Prov., Thuong Xuan Distr., Xuan Lien NR [National Reserve], anthropog. [enic landscape] 19°52' N, 105°14,28' E, 130 m, 29–30.XI.2012, V.V. Zolotuhin leg.; 3♂♂, S, Vietnam, Kannak, Gialai-Kontum, 600 m, 11, 14.11.1988, V. Kuznetzov leg. (ZIN).

Description. Male (Fig. 5). Forewing length 12 mm. Head and thorax dark brown. Forewings dark yellowish gray, hindwings light yellowish gray. Forewing hind edge with an oval convex lobe. Forewing underside with a patch of yellow androconial scales posterior to anal vein. Male genitalia (Fig. 23): uncus moderate in width, with an apical spine; valves oval, costal margin has ovoidal subapical ventral broadening, sacculus apex with hook-like spine directed upwards; saccus broadly triangular at base, narrowly rectangular at apex with rounded angles; aedeagus straight, with an apical triangular tooth; vesica three times longer than wide, with two sclerotized plates terminated by a triangular spine; with one plate located on vesica apex, another one on external side at 1/3 from base.

Remarks. The nominotypical *Katha brevivalva* (Holloway, 2001) from Borneo differs from specimens from Vietnam and Malay Peninsula by long (equal to the valve width) and straight sacculus apices (in the new species these apices are short and curved upwards), and extremely long appendix of the vesica (in the new species this appendix is more than twice shorter) [Holloway, 2001: 225, Fig. 106]. A patch of androconial scales on forewing underside posterior to the anal vein consists of yellow scales in the new species and rufous scales in *Katha brevivalva* Holloway.

Mithuna tranthieudui Dubatolov et Bucsek, **sp.n.**

Material. Holotype — ♂, Central Vietnam, Gia lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 1050 m, 14°42.602' N, 108°39.062' E, 14–19.III.2012, V. Zolotuhin leg.

Description. Male (Fig. 6). Forewing length 10.5 mm. Costal edge slightly concave at 2/3 from base, with a light fold at apical 1/3. Forewing brownish-grey, with a diffuse narrow medial band and a subapical spot at costa. Hindwings light brownish-grey. Male genitalia (Fig. 24): tegumen broad, uncus narrow, finger-like, saccus broadly trapezoidal, valves oval, with a notch at costal 2/3; aedeagus triangular, broad at apex, with two strong subapical spines; vesica with two sclerotized plates covered with few small spines.

Remarks. *Mithuna dimidilinea* Černý, 2009 [Černý, Pinratana, 2009] from Thailand have no costal fold. *M. clivusa* Bucsek, 2012 and *M. pulverea* Bucsek, 2012 from Malakka [Bucsek, 2012: Fig. Mal156, Mal157], as well as *M. quadriplaga* Moore, 1878, *M. fuscivena* Hampson, 1896 [Holloway, 2001: 213, Fig. 39] and *M. strigifera* Hampson, 1900 [Bucsek, 2012: Fig. Mal157a] from a vast territory of South-Eastern Asia, all have a well separated sacculus with a strong apical process that is not presented in the new species. *M. quadriplagoides* Holloway, 2001 from Borneo [Holloway, 2001: 221, Fig. 74] is another species on the genus without the saccular process, but its valve apex is broadly rounded, without a notch like in the new species.

The species is named in honour of Mr. Tran Thieu Du, a colleague by Dr. Zolotuhin during his expedition to Vietnam.

Nudariina

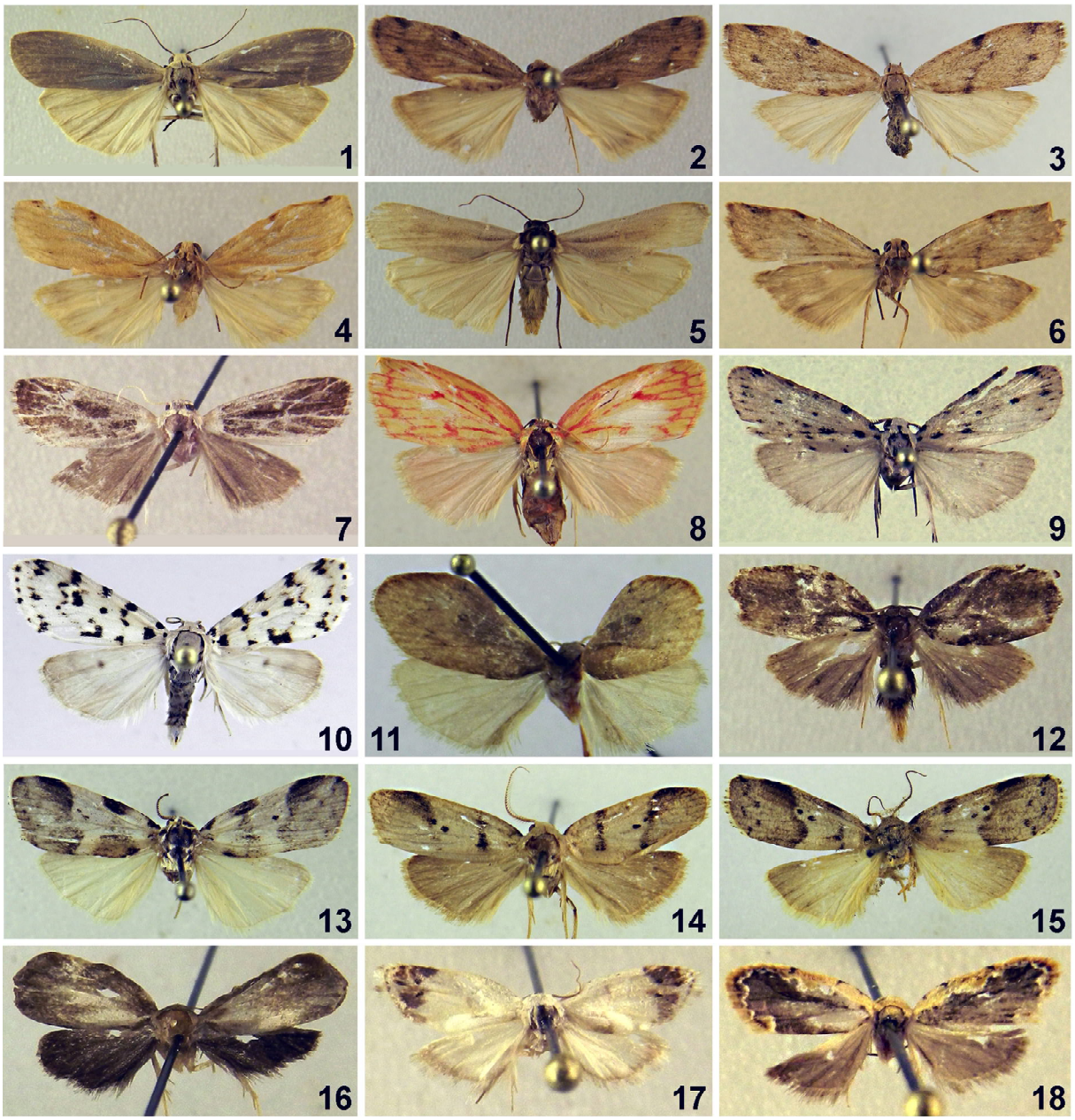
Adites thanhi Dubatolov et Bucsek, **sp.n.**

Figs 7, 25.

Material. Holotype — ♂, Central Vietnam, Kon Tum Prov., Sa Thay Distr., Bargok Comm., Chu Mon Ray NP [National Park], 14°25.34' N, , 107°43.15' E, 680 m, 20–23.III.2012, V. Zolotuhin leg.

Description. Male (Fig. 7). Forewing length 6 mm. Forewings light brown with whitish basal part, central part of costal margin, and veins (but dark at apex). Hindwings light brown. Male genitalia (Fig. 25): tegumen broad, uncus narrow, long, hook-like, saccus triangular, valves oval, with several apical spines, costal one is the longest, several small teeth present on ventral edge at valve apical part; aedeagus straight, broad; vesica with two groups of spike-like cornuti.

Remarks. The genus *Adites* Moore, [1882] includes 24 species from the Himalayas and Southern China via Indochina to Sundaland. Most of them have whitish forewings with brownish bands. Only few species have dark forewings but differing male genitalia structure: *A. frigida* (Walker, 1854) from South-Eastern Asia and Sundaland has short valves simply divided distally [Holloway, 2001: 247, Fig. 235];



Figs 1–18. Type specimens of new species from Vietnam. 1 — *Collita vietnamica* sp.n., holotype, male; 2–3 — *Teulisna tongdzuythanhi* sp.n., holotype, male (2), paratype, female (3); 4 — *Teulisna flava* sp.n., holotype, male; 5 — *Katha pseudobrevivalva* sp.n., holotype, male; 6 — *Mithuna tranthieudui* sp.n., holotype, male; 7 — *Adites thanhi* sp.n., holotype, male; 8 — *Pseudomiltochrista zolotuhini*, gen. et sp.n., paratype, female; 9 — *Aemene zolotuhini* sp.n., holotype, male; 10 — *Aemene annamica* sp.n., holotype, male; 11 — *Macaduma kontumica* sp.n., holotype, male; 12 — *Macaduma micra* sp.n., holotype, male; 13 — *Eugoa annamica* sp.n., holotype, male; 14 — *Eugoa zolotuhini* sp.n., holotype, male; 15 — *Eugoa kuznetzovi* sp.n., holotype, male; 16 — *Trischalis nigrobrunnea* sp.n., holotype, male; 17 — *Neoduma songensis* sp.n., holotype, male; 18 — *Diduga cucphuonga* sp.n., holotype, male.

Рис. 1–18. Типовые экземпляры новых видов из Вьетнама. 1 — *Collita vietnamica* sp.n., голотип, самец; 2–3 — *Teulisna tongdzuythanhi* sp.n., голотип, самец (2), паратип, самка (3); 4 — *Teulisna flava* sp.n., голотип, самец; 5 — *Katha pseudobrevivalva* sp.n., голотип, самец; 6 — *Mithuna tranthieudui* sp.n., голотип, самец; 7 — *Adites thanhi* sp.n., голотип, самец; 8 — *Pseudomiltochrista zolotuhini*, gen. et sp.n., паратип, самка; 9 — *Aemene zolotuhini* sp.n., голотип, самец; 10 — *Aemene annamica* sp.n., голотип, самец; 11 — *Macaduma kontumica* sp.n., голотип, самец; 12 — *Macaduma micra* sp.n., голотип, самец; 13 — *Eugoa annamica* sp.n., голотип, самец; 14 — *Eugoa zolotuhini* sp.n., голотип, самец; 15 — *Eugoa kuznetzovi* sp.n., голотип, самец; 16 — *Trischalis nigrobrunnea* sp.n., голотип, самец; 17 — *Neoduma songensis* sp.n., голотип, самец; 18 — *Diduga cucphuonga* sp.n., голотип, самец.

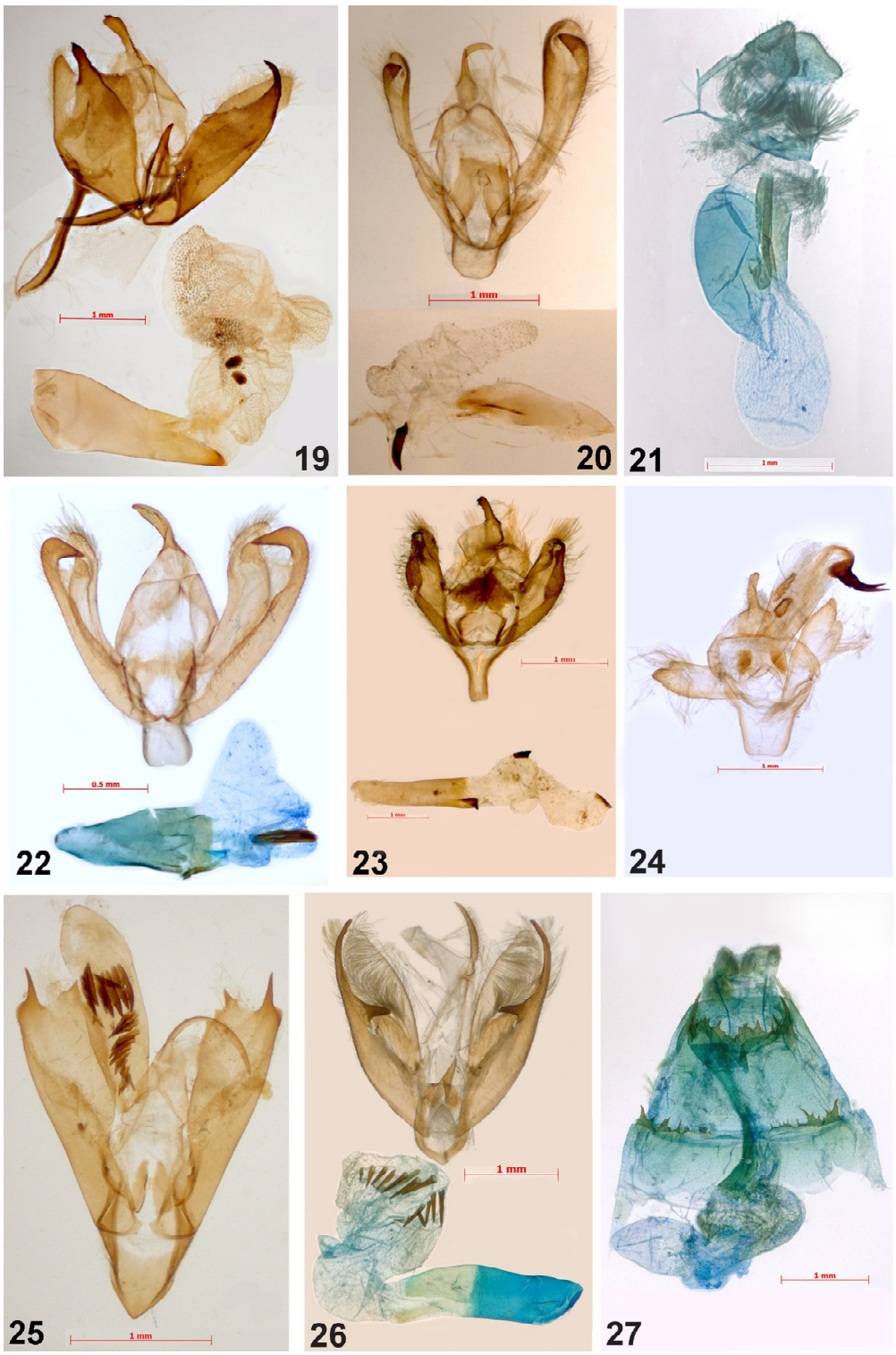


Fig. 19–27. Genitalia structure of new species from Vietnam. 19 — *Collita vietnamica* sp.n., holotype, male; 20–21 — *Teulisna tongdzuythanhi* sp.n., holotype, male (20), paratype, female (21); 22 — *Teulisna flava* sp.n., holotype, male; 23 — *Katha pseudobrevivalva* sp.n., holotype, male; 24 — *Mithuna tranthieudui* sp.n., holotype, male; 25 — *Adites thanhi* sp.n., holotype, male; 26–27 — *Pseudomiltochrista zolotuhini*, gen. et sp.n., holotype, male (26), paratype, female (27).

Рис. 19–27. Строение гениталий новых видов из Вьетнама. 19 — *Collita vietnamica* sp.n., голотип, самец; 20–21 — *Teulisna tongdzuythanhi* sp.n., голотип, самец (20), паратип, самка (21); 22 — *Teulisna flava* sp.n., голотип, самец; 23 — *Katha pseudobrevivalva* sp.n., голотип, самец; 24 — *Mithuna tranthieudui* sp.n., голотип, самец; 25 — *Adites thanhi* sp.n., голотип, самец; 26–27 — *Pseudomiltochrista zolotuhini*, gen. et sp.n., голотип, самец (26), паратип, самка (27).

A. pseudofrigida Holloway, 2001 from Borneo has much longer and narrow valves with two apical processes [Holloway, 2001: 245, Fig. 223]; *A. retusa* Černý, 2009 and *A. impilia* Černý, 2009 [Černý, Pinratana, 2009] from Thailand lack the valve processes, *A. parafrigida* Černý, 2009 [Černý, Pinratana, 2009], also from Thailand, has broadly diverging cucullar and saccular apical processes, the costal one is long.

The species is named in honour of Dr. Tong-dzuy Thanh, a paleontologist from Vietnam, Dubatolov's father's friend during the first author's childhood.

Pseudomiltochrista Dubatolov et Bucsek, **gen.n.**

Figs 8, 26.

Type species: *Pseudomiltochrista zolotuhini* Dubatolov et Bucsek, **sp.n.** (Fig. 8).

Diagnosis. The new genus belongs to the *Miltochrista* complex of genera. Among these genera, the new one is most similar to *Miltochrista* Hübner, [1819] (type species *Noctua rubicunda* [Denis et Schiffermüller], 1775, a junior synonym of *Phalaena miniata* J.R. Forster, 1771) by presence of a series of «large, well separated cornuti in the vesica» [Holloway, 2001: 366], but presence of a medial process, directed upwards, on the sacculus (Fig. 26), as well as quite a different wing pattern (Fig. 8), can distinguish the new genus. Among other genera of this group, *Barsine* Walker, 1854 (type species *Barsine defecta* Walker, 1854) differs by «presence of a field or fields of large but short, asymmetric or otherwise irregular spines in the aedeagus vesica» [Holloway, 2001: 366]. In *Lyclene* Moore, [1860] (type species *Cyllene humilis* Walker, 1854) valves in the male genitalia are quite different, they «usually have both distal costal and (always) saccular processes developed, but no more basal ones; an aedeagus vesica with a small number (often two) of large cornuti that may be rather blade-like, possibly also with more general fine scobination» [Holloway, 2001: 342]. By the female genitalia (Fig. 27), the new genus differs from *Miltochrista* species by absence of strong spines on bursa copulatrix, that are typical for *Miltochrista* species; from *Lyclene* — by long and narrow ductus bursae and elongate bursa divided into two parts by a constriction; in *Lyclene* ductus bursae is short and bursa copulatrix being spherical in shape.

Pseudomiltochrista zolotuhini Dubatolov et Bucsek, **sp.n.**

Figs 8, 27.

Material. Holotype — ♂, **Central Vietnam**, Gia Lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 14°42.602' N, 108°39.062' E, 1050 m, 14–19.III 2012, V. Zolotuhin leg. Paratypes: 1♀, Central Vietnam, Gia Lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 14°42.602' N, 108°39.062' E, 1050 m, 14–19.III 2012, V. Zolotuhin leg.; 1♀, N. Vietnam, Ninh Binh Prov., Nho Quan Distr., Cuc Phuong NP [National Park], 140 m 20°15' N, 105°43' E, 3–5.XII.2012, V. Zolotuhin leg.

Description. Moth (Fig. 8). Forewing length 10 mm. Forewings dark yellow with rose veins, longitudinal lines in central cell and between veins A and Cu_2, irregular submarginal line and a medial curved spot between veins A and Cu_2. Hindwings light yellow, with rosy tint. Male genitalia (Fig. 26): uncus long and narrow, tegumen narrowly triangular, valves oval but slightly angled apically, covered with rough hairs; sacculus with a strong medial process directed upwards and slightly basally, and a long apical process slightly curved upwards; saccus broad and slightly angled apically; juxta short with a strong and narrowly triangular apical process; aedeagus straight, vesica elongate, broadened apically, with two series of strong apical spines, consisting of 6 and 8 cornuti. Female genitalia (Fig. 27): VIII and IX sternites with irregular sclerotized spined processes on distal edges, lateral are stronger than inner; a spine row on IX sternite distal edge complete; vaginal sinus shifted to left side; ductus bursae narrow and long but broader distally and proximally; corpus bursae elongate, divided by a constriction into two parts: basal half with scobination, apical part without any signi.

One more species might be attributed to the new genus, it was described as *Cyclosiella pulchrina* Schaus, 1924 from the Philippines, its type was studied by Černý and Bucsek [2014]. This species has very similar wing shape and forewing pattern with partly fused rose bands and veins [Černý and Bucsek, 2014: 498, Fig. 40a, 40b], but the male and female genitalia differs noticeably: *C. pulchrina* Schaus have no medial process on sacculus and apical process is much narrower and strongly curved upwards [Černý and Bucsek, 2014: 522, Fig. 40c, 40d], ductus bursae is probably short, bursa with a scobinated part at apical part, not basal one, VIII abdominal sternite has no spines on hind edge [Černý and Bucsek, 2014: 522, Fig. 40e]. Additional species of this group is need to select proper synapomorphic characters of the genus.

Cisthenina

Aemene zolotuhini Dubatolov et Bucsek, **sp.n.**

Figs 9, 28.

Material. Holotype — ♂, **Central Vietnam**, Gia Lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 14°42.602' N, 108°39.062' E, 1050 m, 14–19.III.2012, V. Zolotuhin leg. Paratypes: 1♂, 3♀♀, N. Vietnam, Ninh Binh Prov., Nho Quan Distr., Cuc Phuong NP [National Park], 140 m 20°15' N, 105°43' E, 3–5.XII.2012, V. Zolotuhin leg., 1♂, the same locality, 5.XII.2012, V. Zolotuhin leg.

Description. Male (Fig. 9). Forewing length 9.5 mm. Forewings dark grey with a reduced pattern of black dots: no dots are visible along external margin, submarginal row present between apex and vein Cu_1; discal spot is the only clear spot in wing middle part; medial row consists of small dots not reaching costal margin; two spots of antemedial row and two subbasal spots (both at costa and between cell and vein A), as well as one basal spot clearly visible. Hindwings unicolorously grey. Male genitalia (Fig. 28): uncus narrow, slightly expanding at middle; valves short, quadrangular, apically with two processes, at costal and ventral angles; costal process straight, ventral one slightly curved downwards; juxta with two rows of small spines on each side; vesica with one strong spine.

Remarks. By short quadrangular valves, ending with two apical processes, the new species differs from all other species of the genus.

Aemene annamica Dubatolov et Bucsek, **sp.n.**

Figs 10, 29.

Material. Holotype — ♂, **Central Vietnam**, Gia Lai Prov., K'Bang Distr., Dak Roong Comm., vill.[age] Kon Loc, Kon Ka Kinh NP [National Park], 14°42.602' N, 108°39.062' E, 1050 m, 14–19.III.2012, V. Zolotuhin leg.

Description. Male (Fig. 10). Forewing length 10 mm. By the forewing coloration and spot position the new species is very similar to *A. clarimacula* Holloway, 2001 from Borneo and Indochina [Holloway, 2001: pl. 6, fig. 7]. However, the black marginal dots are better expressed, 5–6 spots are clearly visible; other spots are similar, but the medial spot at the

costal margin is situated at the middle between ante- and postmedial spots, and not shifted to the discal spot like in *A. clarimacula* Holloway. Hindwings whitish at base, greyish at apex, with a small and diffuse discal spot. Male genitalia (Fig. 29): uncus narrow, long, valves narrow, bifurcated apically; saccular apical process upturned and longer than width of valve neck; aedeagus with 4 spine-like cornuti.

Remarks. In the male genitalia structure, the new species has an apically bifurcated valve, like *A. marginipuncta* (Talbot, 1926) [Holloway, 2001: 257, Fig. 293] and *A. clarimaculata* Holloway, 2001 [Holloway, 2001: 257, Fig. 294] from Indochina and Borneo. However in these two species, the costal apical process is longer than the hind one, while in the new species they are equal in length; in addition, the new species has an upturned apical process of the sacculus, which is absent in *A. marginipuncta* Talbot and presented but not upturned in *A. clarimaculata* Holloway. A similar upturned saccular process is presented in *A. micromesozona* Holloway, 2001 [Holloway, 2001: 257, Fig. 298; Bucsek, 2012: Fig. Mal085], but the valve apex in this species is not bifurcate as in the new one.

Macaduma kontumica Dubatolov et Bucsek, **sp.n.**

Figs 11, 30.

Material. Holotype — ♂, **Central Vietnam**, Prov. Kon Tum, Distr. Kom Plong, Mang Canh, 1250 m, 11.VI.2006, V. Zolotuhin leg.

Description. Male (Fig. 11). Forewing length 8.5 mm. Forewing outer margin rounded, not angled like in the type species of the genus, *M. tortricella* Walker, 1866 and its relatives. Forewings light brown, darker in central area, with a dark discal ring; hindwings light yellow. Male genitalia (Fig. 30): uncus long, slightly curved, broader at middle part; valves with asymmetrical apical processes: left one has an axe-like apex, right one widening towards apex, with a long strong process on ventral side; juxta sclerotized on each side and covered with dense spines; aedeagus with a sclerotized band inside and a broad field of small spines. Female unknown.

Remarks. The rounded external margin can differentiate the new species from known species which all have more or less angled outer margin. The structure of the valve apices in the new species is also unique in the genus.

Macaduma micra Dubatolov et Bucsek, **sp.n.**

Figs 12, 31.

Material. Holotype — ♂, **Central Vietnam,** Kon Tum Prov., Sa Thay Distr., Bargok Comm., Chu Mon Ray, 680 m, 14°25.34' N, 107°43.15' E, 20–23.III.2012, V. Zolotuhin leg.

Description. Male (Fig. 12). Forewing length 6.5 mm. Forewings brown, but their shape is typical for the genus: costa strongly convex, external edge with triangular process. Hindwings light brown. Male genitalia (Fig. 31) are diagnistic for the species: uncus long, narrow, valves oval, with asymmetrical apical enlargements, left one ending with two rounded processes, right one with a costal process and a short triangular one; juxta sclerotized with two lateral processes; aedeagus with numerous spiniculi.

Remarks. By the male genitalia, the new species differs significantly from other species from the genus: the newly described species, *Macaduma borneana* Holloway, 2001 from Borneo, Malakka Peninsular and Thailand [Holloway, 2001: 257, Fig. 292; Černý, Pinratana, 2009; Bucsek, 2012: Fig. Mal213] and *M. malayana* Bucsek, 2014 [Bucsek, 2014: Genitalia Pl. 4, Fig. MalS39] have narrow, spine-like apical valve processes, *M. calda* Bucsek, 2012 [Bucsek, 2012: Fig. Mal214] and *M. cinnamomarginalis* Bucsek, 2014 [Bucsek, 2014: Fig. MalS40] from Malakka have the valve apices (at least left one) equal or broader than the valve diameter, *M. cinnamum* Bucsek, 2012 [Bucsek, 2012: Fig. Mal130a] from Malakka has the valve apex with three, not two processes. Other species of the genus occur in the Pacific Islands and could not be conspecific with the new one. The single closely related species is *Macaduma tortricella* Walker, 1866 (Fig. 38) from Java, Indo-China and Hainan Is., but its costal processes are located subapically on both valves, and saccular processes are longer than the costal one, vesica with additional sclerotized plate covered with small teeth.

Eugoa annamica Dubatolov et Bucsek, **sp.n.**

Figs 13, 32.

Material. Holotype — ♂, **Central Vietnam**, Gia lai Prov., Kon Ka Kinh NP [National Park], 820 m, 14°182.862' N, 108°29.684' E, 12–13.III.2012, V. Zolotuhin leg. Paratypes: 4♂♂, Central Vietnam, Kon Tum Prov., Sa Thay Distr., Bargok Comm., Chu Mon Ray NP, 14°25.34' N, 107°43.15' E, 680 m, 20–23.III.2012, V.V. Zolotuhin leg.

Description. Male (Fig. 13). Forewing length 10.5 mm. Forewings light grey with a subbasal spot on costa, a diffuse subbasal dot between cell and vein A; a medial band strongly constricted in cell but with its hind part noticeably lightened; cell apex with two dark dots; postdiscal band also constricted in discal area and became diffuse towards outer margin; hindwing yellowish-gray. Male genitalia (Fig. 32) complicated in structure, but typical for the *E. aequalis* Group [Bucsek, 2008]: valves oval, uncus short, broad, with lateral apical processes, tegumen with dorsal shoulders and broad lateral processes, covered with spines; its distal margin with an obtuse and rounded triangular angle at basal 1/3.

Remarks. By male genitalia structure: oval valves, lateral processes on uncus apex, and by presence of a broad dorsal and lateral processes on the tegumen branches, only three species of the *E. aequalis* Group [Bucsek, 2008] are related to the new species. Two of them have different forewing pattern: *E. aequalis* Walker, 1857 [Holloway, 2001: pl. 7, Fig. 13] from Malakka Peninsula, Sumatra and Borneo and *E. trilacunata* Holloway, 2001 [Holloway, 2001: pl. 7, Fig. 14] from Borneo lack any discal dot on the forewings; moreover, the latter has dark forewings with three light spots. The single similar species is *E. gabrielae* Bucsek, 2008 [Bucsek, 2008: 459, Fig. 68] from Thailand and Cambodia, it also has a pair of discal dots on the forewings but differs noticeably by the structure of the lateral processes on the tegumen branches, their distal edge with a strong spine at basal 1/3, not with obtuse and rounded angle, like in the new species.

Eugoa zolotuhini Dubatolov et Bucsek, **sp.n.**

Figs 14, 33.

Material. Holotype — ♂, **North Vietnam,** Thanh Hoa Prov., Thuong Xuan Distr., Xuan Lien NR [National Reserve], anthropog.[enic landscape], 19°52' N, 105°14.28' E, 130 m, 1–2.XII.2012, V. Zolotuhin leg. Paratypes: 1♂, 1♀, the same locality and data.

Description. Moth (Fig. 14). Forewing length 9–9.5 mm. Forewings brownish-grey with two narrow transversal bands, antemedial and discal one, the latter with the same colored umbra towards apex; two black discal dots present on wing: one on postdiscal band, so poorly visible, another one basally at hind apical angle of cell; hindwing light brown. Male genitalia (Fig. 33): uncus with a narrow apical part and a triangular enlargement at base; tegumen with roundly triangular shoulders; valves elongate, with two short triangular processes at apex (costal one slightly bifurcate), few small spines

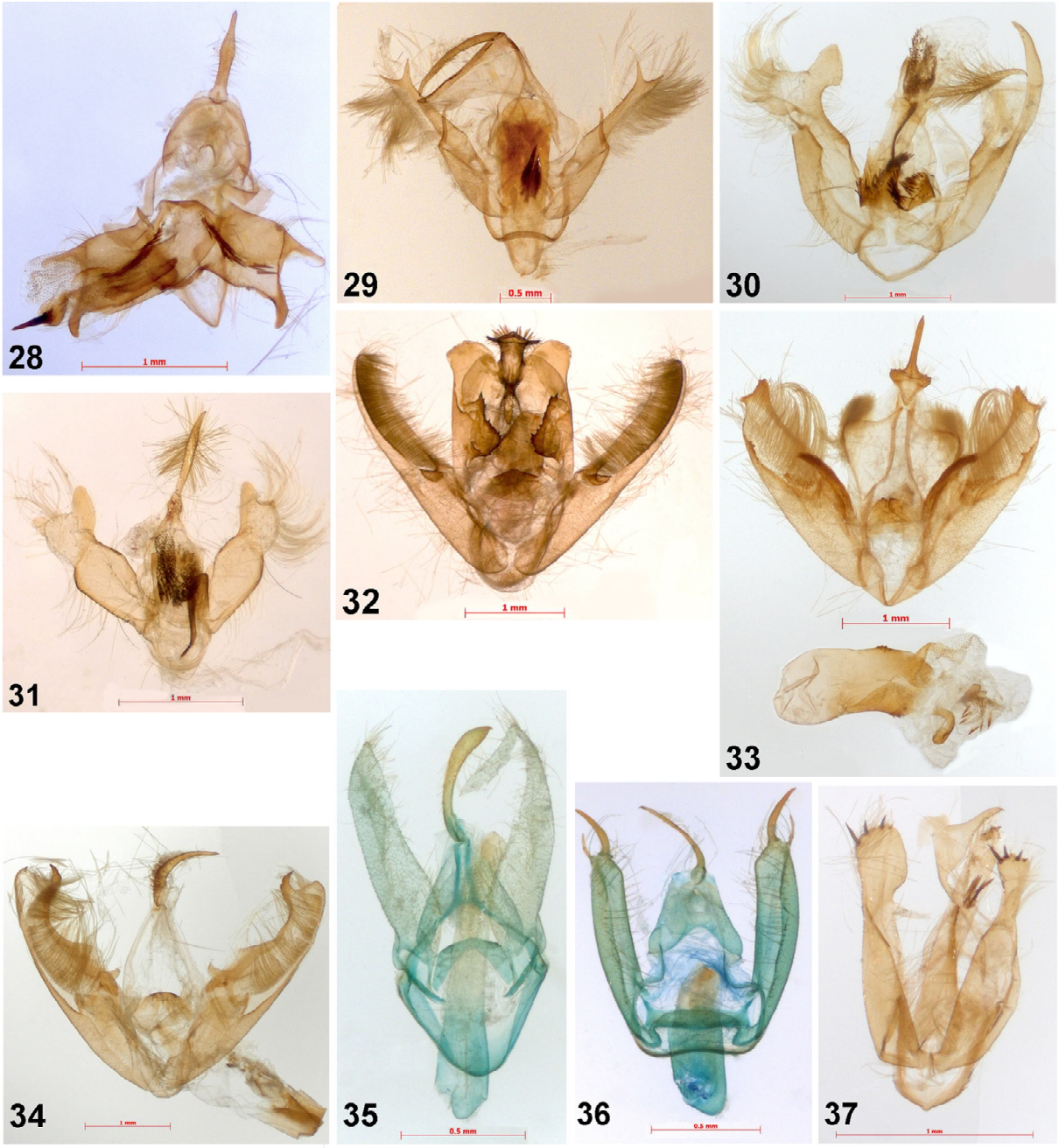


Fig. 28–37. Male genitalia structure of new species from Vietnam, holotypes. 28 — *Aemene zolotuhini* sp.n.; 29 — *Aemene annamica* sp.n.; 30 — *Macaduma kontumica* sp.n.; 31 — *Macaduma micra* sp.n.; 32 — *Eugoa annamica* sp.n.; 33 — *Eugoa zolotuhini* sp.n.; 34 — *Eugoa kuznetzovi* sp.n.; 35 — *Trischalis nigrobrunnea* sp.n.; 36 — *Neoduma songensis* sp.n.; 37 — *Diduga cucphuonga* sp.n.

Рис. 28–37. Строение гениталий самцов новых видов из Вьетнама, голотипы. 28 — *Aemene zolotuhini* sp.n.; 29 — *Aemene annamica* sp.n.; 30 — *Macaduma kontumica* sp.n.; 31 — *Macaduma micra* sp.n.; 32 — *Eugoa annamica* sp.n.; 33 — *Eugoa zolotuhini* sp.n.; 34 — *Eugoa kuznetzovi* sp.n.; 35 — *Trischalis nigrobrunnea* sp.n.; 36 — *Neoduma songensis* sp.n.; 37 — *Diduga cucphuonga* sp.n.

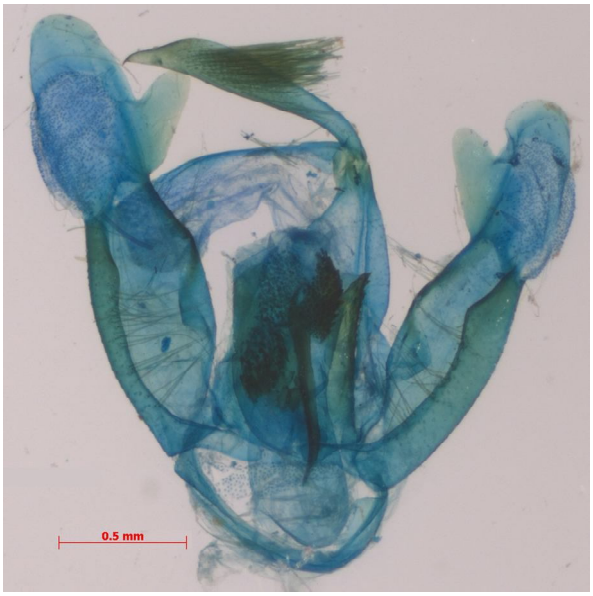


Fig. 38. Male genitalia of *Macaduma tortricella* Walker, 1866, Central Vietnam, Gia Lai province, K'Bang District, Dak Roong Commune, village Kon Loc, Kon Ka Kinh National Park.

Рис. 38. Гениталии самца *Macaduma tortricella* Walker, 1866, Central Vietnam, Gia Lai province, K'Bang District, Dak Roong Commune, village Kon Loc, Kon Ka Kinh National Park.

at apical part of valve ventral edge, and long and narrow process at basal part of sacculus, covered with small spines apically; aedeagus short, broad, with two groups of small spines on each side, vesica with a sclerotized, curved, finger-like process, a group of small spines, and one strong cornutus.

Remarks. The male genitalia structure of the new species is similar to only that in *E. bipunctata* (Walker, 1862) [Holloway, 2001: 268, Fig. 365; Bucsek, 2008: 461, Fig. 82]. Both species have enlargements on the uncus, the shoulders on tegumen branches, and the saccular processes at the valve base; however, the shape of these structures is different. The uncus enlargements are situated at the middle part of the uncus forming a crest-like structure in *E. bipunctata* Wlk., but in the new species they are situated at the basal part, forming an arrow-like structure. The shoulders of the tegumen branches have narrow trapezoidal shape in *E. bipunctata* Wlk. but in the new species they are of a rounded triangular shape. The processes at the sacculus bases are short in *E. bipunctata* Wlk. (about half of the valve width) but long in the new species (longer than the valve width). But the most different is the valve apex: with one costal process in *E. bipunctata* Wlk., but with two apical processes in the new species.

Eugoa kuznetzovi Dubatolov et Bucsek, **sp.n.**

Figs 15, 34.

Material. Holotype — ♂, **South Vietnam**, prov. Gialai-Kontum, Tramlap, 20 km N Buenluoi, 14.XII.1988, V. Kuznetzov leg. Deposited in Zoological Institute, St.-Petersburg, Russia.

Description. Male (Fig. 15). Forewing length 12 mm. Forewing pattern similar to that of *E. bipunctalis* van Eecke, 1926 from Sundaland and Indochina: forewing light grey with brown umbras, bands, and black markings: a dot at wing base, a straight antemedial band with umbra-like broadenings at costal margin and along vein A, two black dots at apical part of the cell hind vein, a curved postmedial band with a rounded bent beyond discal dots (this band is outlined by brown umbras, larger at costal margin and narrower behind cell); submarginal band narrow and poorly visible, irregularly zig-zag-shaped and ending by small but clear spots on each end. Hindwings yellowish-grey at base, light brownish at apex and outer margin. Male genitalia (Fig. 34): uncus hook-like with light widening at basal 1/3; valves elongate, slightly curved upwards, apex rounded with strong curved hook-like subapical process on costal edge; aedeagus short, straight, with sclerotized plates on vesica and scobination.

Remarks. By the wing pattern and male genitalia structure, the new species is similar only to *E. bipunctalis* van Eecke from Indochina and Sundaland [Holloway, 2001: 268, Fig. 363]. Both have the uncus similarly enlarged at basal 1/3 and the similar general shape of the valves. However, the apical process on the costa is quite different in these species: it is straight and situated at the distal edge of the costa in *E. bipunctalis* van Eecke, but strongly curved and situated subapically in the new species.

Trischalis nigrobrunea Dubatolov et Bucsek, **sp.n.**

Figs 16, 35.

Material. Holotype — ♂, **North Vietnam**, Ninh Binh Prov., Nho Quan Distr., Cuc Phuong NP [National Park], 140 m, 20°15' N, 105°43' E, 3–5.XII.2012, V. Zolotuhin leg.

Description. Male (Fig. 16). Forewing length 5.5 mm. Wings unicolorous, fore one — dark brown, hind one brownish-black. Male genitalia (Fig. 35): uncus long, slightly broader at apical 1/5; its tip with a small apical spine; valves elongate, slightly constricting from base to apical 1/6, then triangularly constricted to apex; aedeagus straight, vesica without cornuti.

Remarks. The genus *Trischalis* Hampson, 1894 includes 11 Oriental species. All these species have a light (yellow or light yellowish-brown) wing coloration, often with dark rounded or winding lines at the forewing central and/or dorsal parts. One species, *T. homburquera* Černý, 2014 [Černý, Bucsek, 2014: 498, Fig. 37a] from the Philippines has pale grey forewings with yellow apical and outer margins. So, the new species is the only species in the genus with unicolorly dark wings.

Apomorphic genera (sensu Holloway, 2001)

Neoduma songensis Dubatolov et Bucsek, **sp.n.**

Figs 17, 36.

Material. Holotype — ♂, **North Vietnam**, Bac Giang Prov., Son Dong Distr., Tay Yen Tu NP [National Park], cite 1, 180 m, 21°11' N, , 106°43' E, 22–25.XI.2012, V. Zolotuhin leg.

Description. Male (Fig. 17). Forewing length 4.5 mm. Forewings white with a small umbra spot at hind margin. Forewing external band brown, broader at apex and narrowing towards hind angle. Forewing apex with three black dots, two at proximal margin of dark margin, one at distal margin. Forewing external margin narrowly white with a series of small brownish dots. Hindwings white with diffuse narrow grey margination. Male genitalia (Fig. 36): uncus long and narrow, valves narrow with two straight narrow apical processes, saccular one smaller and narrower, cucullar one longer and stronger. Aedeagus short, stout, without cornuti.

Remarks. According to a light wing pattern, the new species is similar to three species of the genus: *N. ectozona* Hampson, 1918 from Thailand, Malakka, Borneo and Philippines [Holloway, 2001: Pl. 8, Fig. 19], to *N. kuangtungensis* (Daniel, 1951) from India, South China, Thailand and Malakka [Bucsek, 2012: Pl. 13, Fig. 176], and to *N. valvata* Kirti,

Joshi et Singh, 2014. Other species of the genus, *N. nigra* Bucsek, 2012 from Malakka and *N. alexeikorshunovi* Dubatolov et Bucsek, 2013 from Thailand, have dark forewings. However, the first three species with light forewings have quite different male genitalia: the single apical spine is not straight, but strongly curved inwards, or the apical processes on valve are broad.

Diduga cucphuonga Dubatolov et Bucsek, **sp.n.**

Figs 18, 37.

Material. Holotype — ♂, **North Vietnam**, Ninh Binh Prov., Nho Quan Distr., Cuc Phuong NP [National Park], 140 m, 20°15' N, 105°43' E, 3–5.XII 2012, V. Zolotuhin leg.

Description. Male (Fig. 18). Forewing length 5 mm. Most part of forewing brownish. Costal margin yellow; its hind border broadly rugged; costa with three small brown dots. External margin consists of a yellow fringe, a light brown umbra and a sinuous whitish line. Hindwings light brown. Male genitalia (Fig. 37): uncus short, valves asymmetrical, elongate with an apical widening and four strong spines on apical margin; left apical widening twice broader then right one. Aedeagus with several spines inside. Females unknown.

Remarks. The forwing pattern of the new species is typical for many species of the genus; it is similar in *D. pectiniger* Holloway, 2001, *D. ciliata* Holloway, 2001 from Borneo, *D. trichophora* Hampson, 1900, *D. flavicostata* (Snellen, 1878) from Sundaland and Indo-China, *D. spinosusa* Bucsek, 2012 from Malakka. However, the valve shape is dissimilar to all known species of the genus. Most of them have a needle shaped valve tip, like in *D. annulata* Hampson, 1900 [Holloway, 2001: 280, Fig. 445], *D. pectinifer* Holloway, 2001 [Holloway, 2001: 280, Fig. 454], *D. trichophora* Hampson, 1900 [Holloway, 2001: 280, Fig. 450] from Sundaland and adjacent territories, *D. alternota* Bucsek, 2014 [Bucsek, 2014: Genitalia Pl. 1, Fig. MalS09], *D. amoenusa* Bucsek, 2012 [Bucsek, 2012: Fig. Mal022a], *D. flavifinis* Bucsek, 2014 [Bucsek, 2014: Genitalia Pl. 1, Fig. MalS07], *D. mininota* Bucsek, 2014 [Bucsek, 2014: Genitalia Pl. 2, Fig. MalS10] from Malakka. Other species, like *D. barlowi* Holloway, 2001 [Holloway, 2001: 280, Fig. 448], *D. ciliata* Holloway, 2001 [Holloway, 2001: 280, Fig. 447], *D. dorsolobata* Holloway, 2001 [Holloway, 2001: 280, Fig. 446] from Borneo, *D. nota* Bucsek, 2012 [Bucsek, 2012: Fig. Mal024], *D. zetes* Bucsek, 2014 [Bucsek, 2014: Fig. MalS08] from Malakka have a widened or complicated valve apex without spines. The only species with strong spines on valves is *D. spinosusa* Bucsek, 2012 [Bucsek, 2012: Fig. Mal022] from Malakka, but they are situated on the sacculus, not on the cucullus apex. Another species, *D. albicosta* Hampson, 1891 from India and Indo-China differs by presence of a dark spot on the hindwings. Some other species of the genus have different wing pattern: *D. ambigua* Bucsek, 2012 from Malakka has a wide dark band on the forewings, with a light base and external margin; *D. fumipennis* Hasmpson, 1891 from South India — grey forewings without any yellow pattern, *D. excisa* Hampson, 1918 from the Philippines — a dark androconial patch at the hindwings tornus, *D. metaleuca* Hampson, 1918 from the Philippines — the hindwing and forewing base are white.

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