

## Does *Eilema* Hübner, [1819] (Lepidoptera, Arctiidae, Lithosiinae) present one or several genera?

### *Eilema* Hübner, [1819] (Lepidoptera, Arctiidae, Lithosiinae) — один или несколько родов?

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**Ключевые слова:** Lepidoptera, Arctiidae, Lithosiinae, таксономия, систематика, новый вид, Палеарктика, Россия.

**Abstract.** The generic diagnoses of *Eilema* Hb., *Manulea* Wlgr., *Tarika* Moore, *Gandhara* Moore, *Collita* Moore, *Katha* Moore, *Capissa* Moore, *Dolgoma* Moore, *Zadadra* Moore, *Prabhasa* Moore, *Zobida* Birket-Smith, *Wittia* de Freina, *Setema* de Freina et Witt, *Muscula* Koçak and *Colinia* Agenjo are compared; the name *Colinia* Agenjo found to be preoccupied and is changed to *Agenjoa* nom.n. It is shown that the type species of the genus *Eilema*, *E. caniolum* Hb., distinctly differing in genitalic features from other *Eilema* s.lat., therefore this genus is considered as monotypical. Because of the genitalic peculiarities, most genera are considered as separate ones and only *Setema* de Freina et Witt is downgraded to a subgenus of *Manulea* Wlgr. A list of species included is given for all studied genera.

A new species *Manulea pseudofumidisca* Dubatolov et Zolotuhin, **sp.n.** is described from Amur Region and Primorye; formerly it was cited as «*Eilema fumidisca* Hmps.» or «*Lithosia coreana* Leech». This species is diagnosed by a wide subcostal yellow line with dark field widely rounded nearby apex whereas in typical *E. fumidiscum* it is pointed there. The species resembles *M. minor* Okano in genitalic characters but bears 4–5 cornuti instead of 3 presented by *M. minor*. Another new species, *Manulea omelkoi* Dubatolov et Zolotuhin, **sp.n.**, is described from the Southern Primorie; it resembles small *Wittia sororcula* Hfn., *E. affineolum* Brem. or *E. nankingicum* Dan. but is diagnosed by a presence of two large and two smaller cornuti. *Manulea kansuensis* (Hering) is listed from Transbaikalia as new to Russia and Mongolia. *Lithosia innshanica* Daniel and *Lithosia japonica brunnescens* Daniel are considered as synonyms of the species.

**Резюме.** Проведено сравнение диагнозов родов *Eilema* Hb., *Manulea* Wlgr., *Tarika* Moore, *Gandhara* Moore, *Collita* Moore, *Katha* Moore, *Capissa* Moore, *Dolgoma* Moore, *Zadadra* Moore, *Prabhasa* Moore, *Zobida* Birket-Smith, *Wittia* de Freina, *Setema* de Freina et Witt, *Muscula* Koçak и *Colinia* Agenjo (последнее название прекоупировано, заменено на *Agenjoa* **nom.n.**). Выяв-

лено, что типовой вид рода *Eilema*, *E. caniolum* Hb. заметно отличен по строению гениталий самцов от других видов *Eilema* s.lat., поэтому род признаётся монотипичным. На основании различий в строении гениталий самцов признаётся самостоятельный родовой статус большинства названий, только *Setema* de Freina et Witt сводится в подроды к *Manulea* Wlgr. Приводится систематический список видов исследованных родов.

Из Приамурья и Приморья описан *Manulea pseudofumidisca* Dubatolov et Zolotuhin, **sp.n.**, который ранее ошибочно приводили из этих мест и Китая как «*Eilema fumidisca* Hmps.» или «*Lithosia coreana* Leech». Новый вид характеризуется широким жёлтым костальным краем, причём тёмное поле основной части передних крыльев широко закруглено у вершины крыла, а у *E. fumidiscum* оно в этом месте заострено. По строению гениталий новый вид наиболее близок к *M. minor* Okano, но характеризуется меньшим числом конусовидных корнутусов (из 3 вместо 4–5 у нового вида). Из Южного Приморья описан *Manulea omelkoi* Dubatolov et Zolotuhin, **sp.n.**, близкий по внешности к мелким *Wittia sororcula* Hfn., *E. affineolum* Brem. и *E. nankingicum* Dan. От близких видов новый вид отличается наличием двух крупных корнутусов и двух мелких. Из Забайкалья приводится новый вид для фаун России и Монголии — *Manulea kansuensis* (Hering), к которому сводятся в синонимы *Lithosia innshanica* Daniel и *Lithosia japonica brunnescens* Daniel.

## Introduction

The species set joined nowadays into the genus *Eilema* Hübner, [1819], had been treated within the genus *Lithosia* Fabricius, 1798 [Staudinger, Rebel, 1901; Seitz, 1910; Daniel, 1954; Forster, Wohlfahrt, 1960] for the long time in XIX and XX centuries. After A. Watson et al. [1980] designated the type species of

both genera, *Eilema* has been treated as the generic name for all species formerly included in *Lithosia* [Inoue, 1982; de Freina, Witt, 1987; Fang, 2000; Holloway, 2001, etc.] but only with *Phalaena quadra* Linnaeus, 1758 considered in *Lithosia* F. However, male genitalia structure of the *Eilema* type species, *Phalaena caniola* Hübner, [1808] widely distributed in West Palearctics were studied carefully by nobody therefore some interesting and diagnostically important characters were overlooked. Birket-Smith [1965] considered some Palaearctic and Oriental genera in his generic revision of Afrotropic Lithosiini but with a lot of confusion and without detailed analysis. Only Holloway [2001] transferred several Oriental species to the genus *Brunia* Moore, 1878, with the type species *Lithosia antica* Walker, 1854 (was described from Ceylon but is distributed throughout the Oriental Region) based on similar features of male genitalia. Other Sundaland species he kept provisionally in *Eilema* (sensu lato) using generic name in quotes. The present article is focused on attempt to separate the *Eilema* species (sensu lato) into monophyletic groups those might be treated as good genera. We are including into this account only species from western and northern parts of Eurasia overpass many Chinese, Oriental and Australian species for next special review. To delineate the chosen groups we use only male genitalia peculiarities although in female genitalia such characters are often also well developed (e.g., presence of bulla or additional vaginal sclerites); but for some groups female attribution needed in special research.

## Descriptions of generic groups

Till now, several generic names have been introduced within *Eilema* Hb. For them, some external characters and male genitalia diagnoses (except of characters common in all groups) are given below; the generic groups are listed chronologically.

### *Eilema* Hübner, [1819] 1816

Verz. bekannter Schmett.: 165.

**Type species:** *Bombyx caniola* Hübner, [1808] 1796; Samml. Eur. Schmett. 3: pl. 51, fig. 220, by subsequent designation by Moore, 1878; Proc. Zool. Soc. London 1878: 17 [Watson et al., 1980].

**Diagnosis.** Forewings narrow with nearly straight costal margin and a pale subcostal line; externally resembles many other groups of *Eilema* sensu lato. Male genitalia (Fig. 9): uncus very wide, laterally strongly flattened, with a slender tip; valvae oval without costal or ventral processes and with medioapical membranous field; there is wide triangular harpe

on inner surface near the valva base; juxta without apical processes; saccus long bearing androconial scales; aedeagus with an apical sclerotized fascia and a short apical spur; cornuti spike-like, unequal in size; vesica bag-shaped with irregular lobes and weak zone of scobination.

### *Manulea* Wallengren, 1863

Wien. ent. Monatschr. 7: 145, 146.

**Type species:** *Lithosia gilveola* Ochsenheimer, 1810, by subsequent designation by Moore, 1878; Proc. zool. Soc. London 1878: 18. Now is treated as junior synonym of *Phalaena palliatella* Scopoli, 1763; Entom. Carn.: 248, fig. 636.

**Diagnosis.** Forewings narrow with nearly straight costal margin and a pale line along it; externally resembles many other groups of *Eilema* sensu lato. In some species androconial scales are presented on the costal margin of the forewing underside. Male genitalia (Figs 1–8): uncus moderate in width; valvae oval or contracted apically, with distinct ventral process curved upwards; harpe absent; juxta without apical processes; saccus long, trapezoid, bearing androconial scales; aedeagus with an apical sclerotized fascia and a short apical spur; cornuti spike-like, unequal in size; vesica bag-shaped with irregular lobes and distinct zone/zones of scobination.

**Remarks.** *Manulea* Wlgr. was treated as different from *Eilema* Hb. by E. Edwards [1996], but was based on Australian species that are significantly different from the type species of both genera.

### *Tarika* Moore, 1878

Proc. Zool. Soc. London 1878: 14.

**Type species:** *Lithosia varana* Moore, 1865; Proc. zool. Soc. London 1865: 797, by subsequent designation by Kirby, 1892; Synonymic Cat. Lepid. Heterocera 1: 322.

**Diagnosis.** Forewings moderate in width and with a curvation of costal margin, unicolourly pale, patternless. Male genitalia (Fig. 10): uncus moderate in width, with an apical spine; valvae with an ovoid costal process and a hook-like ventral process apically upcurved; there is short but wide triangular harpe; juxta without apical processes; saccus long, trapezoid in shape; aedeagus without any sclerotizations; cornutus numerous, spine-like, presented at the vesica base; vesica tubular, bilobate, both lobes curved, without scobination. Male genitalia are proportionally reduced in comparison with a moth size.

### *Gandhara* Moore, 1878

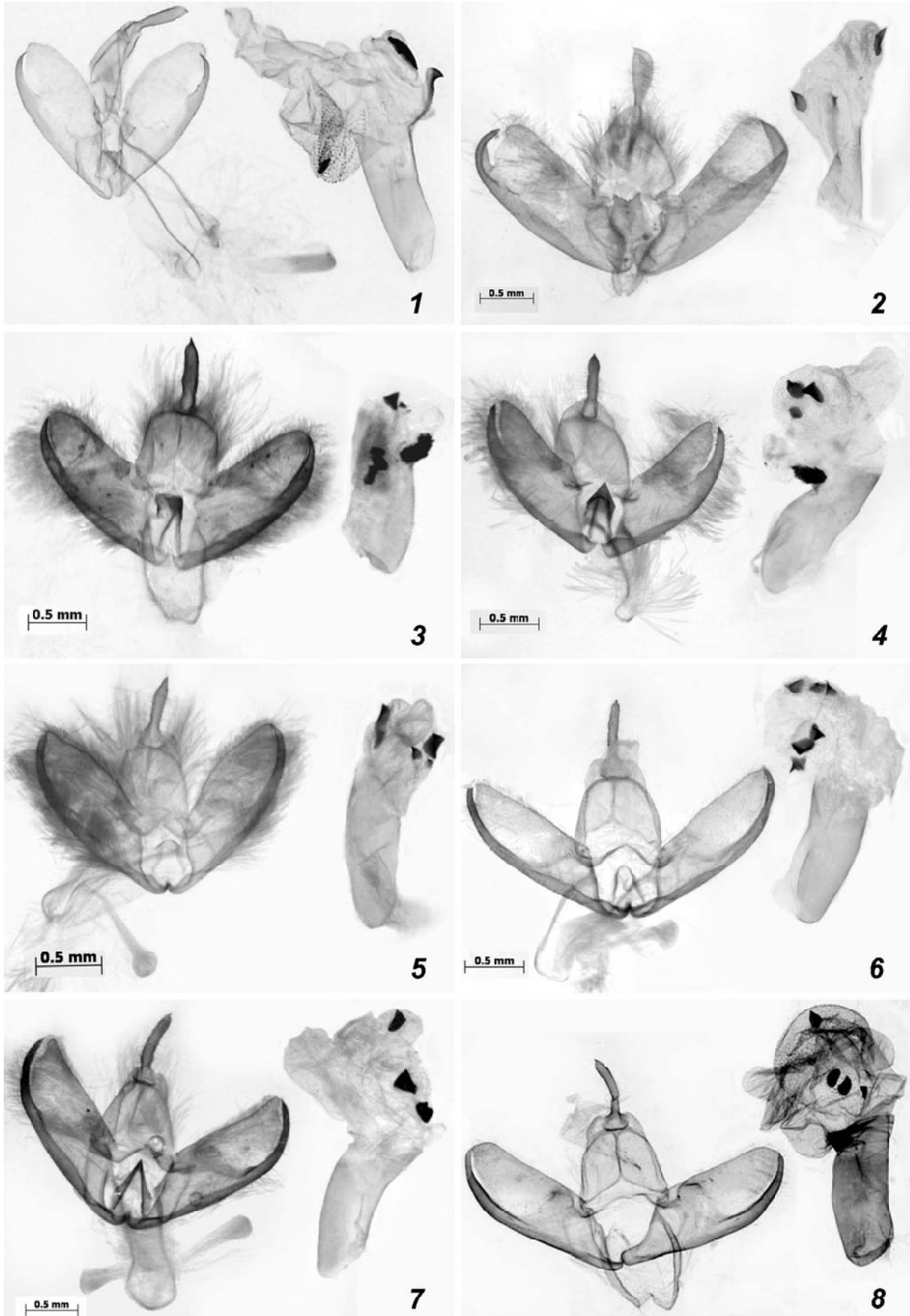
Proc. zool. Soc. London 1878: 15.

**Type species:** *Lithosia serva* Walker, 1854; List Specimens lepid. Insects Colln Br. Mus. 2: 506, by monotypy.

**Diagnosis.** Forewings rather broad with convex costal margin and a pale submarginal line; externally resembles many other groups of *Eilema* sensu lato particularly *Collita* Moore species, but males with a tuft of androconial scales in the beginning of radial veins on forewing upperside. Male

Figs 1–8. Male genitalia of *Manulea* species. 1 — *M. palliatella*, Turkey, Asia Minor, Prov. Bolu (MWM); 2 — *M. atratula*, Russia, Tuva, Tannu-Ola Mts.; 3 — *M. pseudofumidica* sp.n., holotype, SE Russia, Khabarovsk suburbs; 4 — *M. minor*, Japan, Mt. Ariake; 5 — *M. omelkoi* sp.n., holotype, SE Russia, South Primorye, Gornotaezhnoe; 6 — *M. affineola*, SE Russia, South Primorye, Ryazanovka; 7 — *M. nankingica*, SE Russia, Khabarovsk suburbs; 8 — *M. kansuensis*, holotype, China, S Gansu (Riksmuseet Stockholm).

Рис. 1–8. Гениталии самцов видов рода *Manulea*. 1 — *M. palliatella*, Турция, Малая Азия, пров. Болу (MWM); 2 — *M. atratula*, Россия, Тува, Танну-Ола; 3 — *M. pseudofumidica* sp.n., голотип, ЮВ Россия, окрестности Хабаровска; 4 — *M. minor*, Япония, гора Ариакэ; 5 — *M. omelkoi* sp.n., голотип, ЮВ Россия, Южное Приморье, Горнотаёжное; 6 — *M. affineola*, ЮВ Россия, Южное Приморье, Рязановка; 7 — *M. nankingica*, ЮВ Россия, окрестности Хабаровска; 8 — *M. kansuensis*, голотип, Китай, Ю Ганьсу (Riksmuseet Stockholm).



genitalia (Fig. 11): uncus moderate in width; valvae with an ovoid costal process and a hook-like ventral process apically upcurved; harpe absent; juxta with apical processes presented as spinulose brushed fused with lateroapical parts of the tube of the aedeagus; saccus moderate in size; aedeagus short; cornutus single, massive, spine-like, slightly longer than aedeagus diameter; vesica tubular, without zones of scobination.

#### *Collita* Moore, 1878

Proc. zool. Soc. London **1878**: 16.

**Type species:** *Bombyx griseola* Hübner, [1803] 1796; Samml. Eur. Schmett. **3**: pl. 23, fig. 97, by original designation.

**Diagnosis.** Forewings broader, with nearly straight to distinctly convex costal margin; pale costal line often absent. Male genitalia (Fig. 12): uncus moderate in width; valvae with an apically contracted costal and saccular processes and very wide sclerotized saccular part of valva distinctly angled or with a process on ventral margin; outer margin of valva often serrate; juxta with a long apical process; saccus long, trapezoid; aedeagus with an apical sclerotized fascia and short apical spur; cornuti numerous, cone-like, unequal in size; there is an additional spinicular field on vesica; vesica huge bag-shaped with irregular lobes.

#### *Katha* Moore, 1878

Proc. zool. Soc. London **1878**: 16.

**Type species:** *Bombyx helvola* Hübner, [1803] 1796; Samml. Eur. Schmett. **3**: pl. 23, fig. 95, by subsequent designation by Hampson, 1900; Cat. Lepid. Phalaenae Br. Mus. **2**: 130, 145, but cited as *Noctua depressa*, a nominal species not originally included in *Katha* [Watson et al., 1980]. Now treated as junior synonym of *Noctua deplana* Esper, 1787; Schmett. **4** (1): 97–98, t. 93, figs 1–2.

**Diagnosis.** Forewings narrow, with nearly straight costal margin in males and slightly convex in females; pale costal line often undistinguishable on light ground colour. Male genitalia (Fig. 13): uncus moderate in width; valvae with an ovoid costal process and a hook-like ventral process apically slightly upcurved; harpe absent; juxta without apical processes; saccus moderate in size; aedeagus apically with a sclerotized process; cornutus single, spine-like, several times longer than aedeagus diameter; vesica tubular, complexly curved, with indistinct lateral lobes and zone/zones of scobination. Sometimes larger species.

#### *Capissa* Moore, 1878

Proc. zool. Soc. London **1878**: 19.

**Type species:** *Lithosia vagesa* Moore, [1860] 1858–1859; in: Horsfield et Moore, Cat. lepid. Insects Mus. Nat. Hist. East-India House **2**: 304, by subsequent designation by Hampson, 1900; Cat. Lepid. Phalaenae Br. Mus. **2**: 130.

**Diagnosis.** Forewings narrow, with nearly straight costal margin; there is no pale subcostal line on forewings. Wings yellow but forewings with a fold of androconial scales withing along the cubital vein, hindwings with a darker central patch of androconial scales. Male genitalia

(Fig. 14): uncus slender, slightly curved downwards; valvae ovoid, slightly contracted apically, with distinct ventral process curved upwards; harpe as a membranous short and wide process covered with setae; juxta without apical processes; saccus short, lacking androconial scales; aedeagus with a strongly sclerotized hook-like processus on upper surface; cornuti spike-like; vesica short, bag-shaped without any scobination.

#### *Dolgoma* Moore, 1878

Proc. zool. Soc. London **1878**: 20.

**Type species:** *Lithosia reticulata* Moore, 1865; Proc. Zool. Soc. London **1865**: 798, by original designation.

**Diagnosis.** Forewings moderate in width and curvature of costal margin, yellow to grey with numerous dots sometimes forming an oblique dark fascia. Male genitalia (Figs 15–16): uncus moderate in width; valvae with round apically costal and saccular processes; saccular apical process deflected and covered with small spines; juxta wide without apical processes; saccus wide, short, without androconial scales; aedeagus without an apical spur or fascia; there are no strong cornuti but with a spinicular field on vesica or same fine needle-shaped cornuti; vesica bag-shaped elongated without lobes.

#### *Zadadra* Moore, 1878

Proc. zool. Soc. London **1878**: 25.

**Type species:** *Zadadra distorta* Moore, 1878, by monotypy.

**Diagnosis** (based on Fang, 2000: 240–244). Forewings also moderate in width, without a curvature of costal margin, but sometimes with convex hind margin; dark postdisca band usually present, connected with a dark spot on a costal margin; androconial scales present in the central cell along radial vein; hindwings grey or yellow, sometimes with a darker external margin. Male genitalia (Figs 27–29): uncus narrow, long; sacculus wide, with apical part of different shape; cucullus often wide; transtilla forming an arch above aedeagus; juxta probably absent; saccus wide and rounded; aedeagus straight or slightly curved, often with an apical spine; vesica without cornuti.

#### *Prabhasa* Moore, 1878

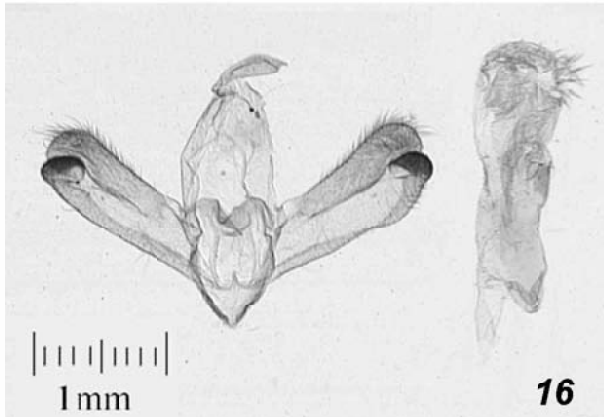
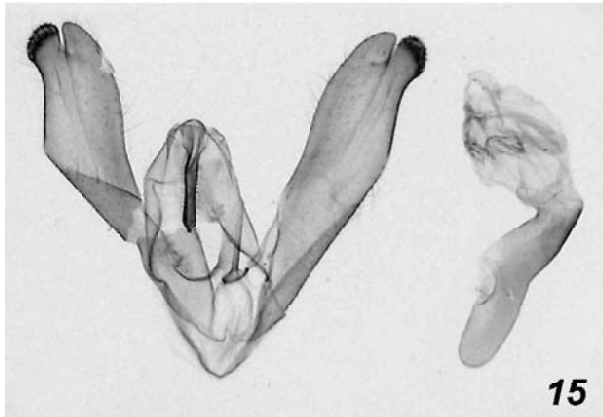
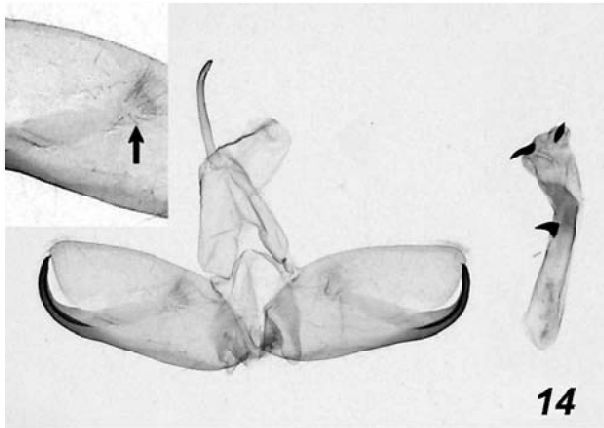
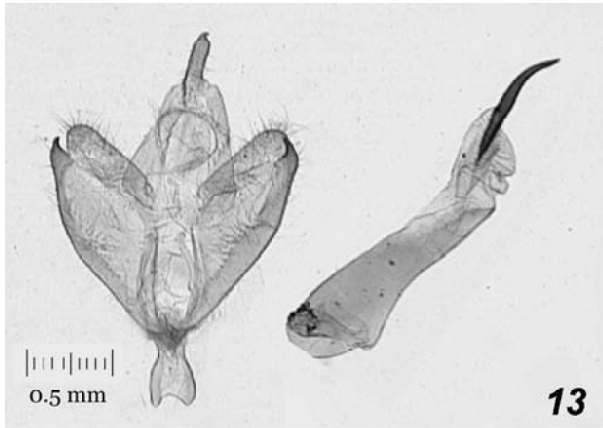
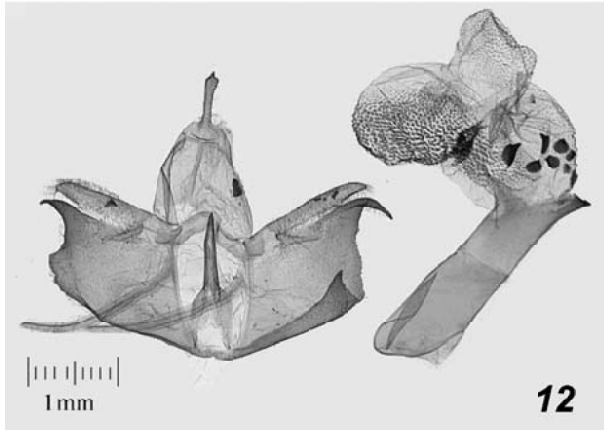
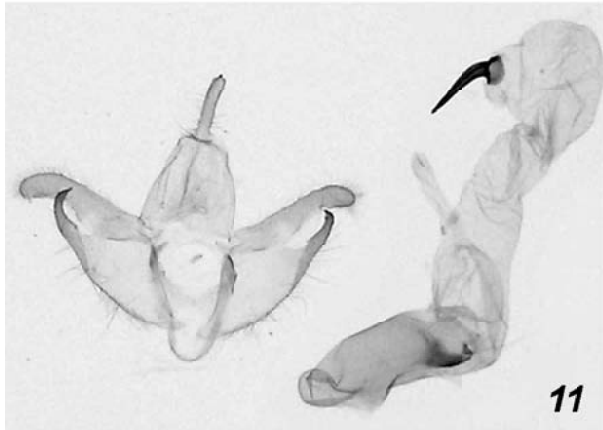
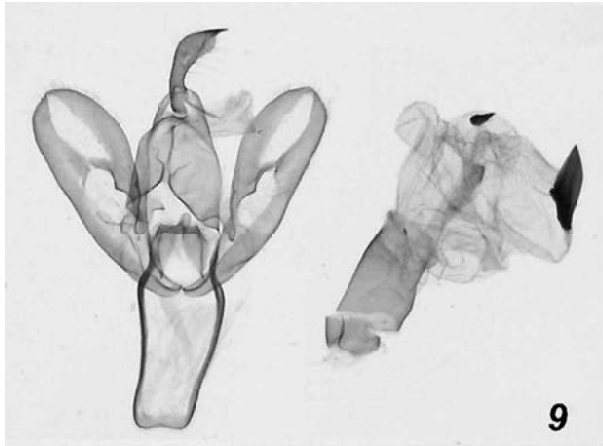
Proc. zool. Soc. London **1878**: 25.

**Type species:** *Prabhasa venosa* Moore, 1878, by subsequent designation by Hampson, 1894; Fauna Br. India (Moths) **2**: 76.

**Diagnosis.** Forewings (Plate VII: 7) also moderate in width, without a curvature of costal margin, dark grey with lighter costal margin, a dark costal spot near discoidal vein, and a dark shadow beyond this spot directed towards the middle of hind margin; there is an elongate patch of androconial scales in the central cell along the radial vein; hindwings brownish-grey, with a lighter base. Male genitalia (Figs 25–26): uncus moderate in width, slightly S-curved; sacculus wide, almost fused by their ventral edges, their apices upturned; cucullus noticeably shorter than sacculus,

Figs 9–16. Male genitalia of *Eilema* and similar genera. 9 — *Eilema caniohum*, Germany, Oberhausen (MWM); 10 — *Tarika varana*, India, Sikkim (MWM); 11 — *Gandbara serva*, India, Uttar Pradesh, Nainital (MWM); 12 — *Collita griseola*, SE Russia, Sikhote-Alin; 13 — *Katha deplana*, Ukraine, Dranoe (MWM); 14 — *Capissa prope vagesa*, India, Uttar Pradesh, Nainital (MWM); 15 — *Dolgoma reticulata*, East Nepal, Surke Danda (MWM); 16 — *D. cribrata*, N Korea, Pektusan Mt. (MWM).

Рис. 9–16. Гениталии самцов рода *Eilema* и близких родов. 9 — *Eilema caniohum*, Германия, Оберхаузен (МВМ); 10 — *Tarika varana*, Индия, Сикким (МВМ); 11 — *Gandbara serva*, Индия, Уттар Прадеш, долина Найни (МВМ); 12 — *Collita griseola*, ЮВ Россия, Сихотэ-Алинь; 13 — *Katha deplana*, Украина, Драное (МВМ); 14 — *Capissa prope vagesa*, Индия, Уттар Прадеш, долина Найни (МВМ); 15 — *Dolgoma reticulata*, В Непал, Сурке Данда (МВМ); 16 — *D. cribrata*, Северная Корея, гора Пэктусан (МВМ).



with rounded apices slightly angled at costa; transtilla forming an arch above aedeagus; juxta almost reduced; saccus short but wide, rounded; aedeagus slightly S-shaped, narrowing towards apex; vesica without cornuti.

**Remarks.** Sometimes, *Prabhasa* Moore is combined with *Zadadra* Moore, 1878 [Černý, Pinratana, 2009]; however, male genitalia of both genera are very different [Fang, 2000].

#### *Zobida* Birket-Smith, 1965

Pap. Fac. Sci. Haile Sellassie I Univ. (C) 1: 31.

**Type species:** *Eilema trinitas* Strand, 1912; Arch. Naturgesch. 78 (A) 7: 181, by original designation.

**Diagnosis.** Forewings narrow with two dark spots on each; there is no pale subcostal line; hindwings light. Male genitalia (Fig. 17): uncus moderate in width; valvae oval apically, distinct ventral process curved upwards; harpe on inner surface of valva at its base of complex shape and consists of two different processes: the hind one is bump-like covered with small spines, the fore one is bifurcated hook-like; juxta without apical processes; saccus wide and short; aedeagus wide, without an apical sclerotized fascia and cornuti.

**Remarks.** According to the group review [de Toulgoët, 1972], three species are included in the genus: *Eilema bipuncta* (Hübner, 1823–1824) from the southern coast of Iberian Peninsula in SW Europe and neighboring part of Morocco in NW Africa; *E. jacobsi* (Hampson, 1914) from West Africa and *E. colon* (Möschler, 1872) from South Africa. However, *E. jacobsi* (Hmps.) was synonymized with the type species of *Zobida* Birk.-Sm., *Eilema trinitas* Strand, 1912 [Seitz, 1926] also from West Africa (Togo, «Bismarckburg»). So, all mentioned species should be transferred into *Zobida* Birk.-Sm.

#### *Wittia* de Freina, 1980

Nachrichtenblatt der bayerischen Entomologen 29: 80, replacement name for *Systropha* Hübner, [1819] 1916; Verz. bekannter Schmett.: 166; nec Illiger, 1806; Magazin Insektenk. (Illiger) 5: 145 — Insecta, Hymenoptera [Watson et al., 1980].

=*Strysopha* Arora et Chaudhury, 1982; Tech. Mono. 6: 27–28, replacement name for *Systropha* Hübner, [1819] 1916 and objective synonym of *Wittia* de Freina, 1980.

**Type species:** *Bombyx aureola* Hübner, [1803] 1796; Samml. Eur. Schmett. 3: pl. 24, fig. 98, by subsequent designation by Moore, 1878; Proc. Zool. Soc. London 1878: 18.

**Diagnosis.** Forewings moderate in width and with a curvation of costal margin, unicolourly yellow, patternless. Male genitalia (Fig. 18): uncus long and very slender, valvae with wide apically ovoid costal processes; saccular process apically sclerotized, long, upcurved; inner surface of valva at the base with a bump process; juxta without apical processes; saccus short; aedeagus with small apical process; there are several rather similar cornuti on vesica; vesica bag-shaped short with indistinct short lobes.

#### *Setema* de Freina et Witt, 1984

Nota lepid. 7 (4): 331–332.

**Type species:** *Bombyx cereola* Hübner, [1800–1803] 1827; Europ. Schmett. 2: fig. 99, by original designation.

**Diagnosis.** Forewings broad, with nearly straight costal margin and a pale subcostal line; scaleness sparse wings lokk semitransparent. Male genitalia (Fig. 21): uncus moderate in width; valvae contracted apically, with distinct ventral process curved upwards; harpe absent; juxta without apical processes; saccus moderate; aedeagus without an api-

cal sclerotized fascia or apical spur; cornuti spike-like, equal in size; vesica bag-shaped with several cone-like cornuti.

**Remarks.** In the original description, authors stated this genus as transitional between *Eilema* Hb. and *Setina* Schrank (type species: *Phalaena irrorella* Linnaeus, 1758), based mainly on wing shape. However, male genitalia structure of *Setema* does not show any affinity with *Setina* species: *S. irrorella* (Linnaeus, 1758), *S. aurea* (Ménétriès, 1832), *S. roscida* ([Denis et Schiffermüller], 1775); all species of the latter genus bear hook-like harpe absent in *Setema*; set, shape and topography of cornuti are also different in both genera.

#### *Muscula* Koçak, 1991

Priamus 5 (4): 126, originally established as «Sect. *Muscula* n.» in *Eilema* Hbn.

**Type species:** *Lithosia muscula* Staudinger, 1899; Deutsche entomologische Zeitschrift Iris 12: 156, by original designation.

**Diagnosis.** Forewings broad, with convex costal margin; a pale subcostal line absent. Male genitalia (Figs 19–20): uncus long and slender; valvae entirely sclerotized with saccular field predominantly developed; cucullar lobe reduced to basal hook-like appendix; harpe absent; juxta strongly modified in spined bifurcate processes; saccus medially membranous with sclerotized lateral arms, bears androconial scales; aedeagus short, without an apical sclerotized fascia and apical spur; cornuti very fine, needle-shaped, in some species substitute by scobinate zones. Vesica short tubular. Generally small species.

For one distinct lineage of the *Eilema*-complex (*Colinia* Agenjo, 1977), the name was found to be preoccupied. Therefore a new one is introduced here to designate it.

#### *Agenjoa* Dubatolov et Zolotuhin, **nom.n.**

=*Colinia* Agenjo, 1977; Graellsia 33: [314], nec *Colinia* Cossman, 1906, nec *Colinia* Nuttall, 1832.

**Type species:** *Lithosia lurideola* [Zincken], 1817; Allgem. Literaturzeitung (217): 68, by monotypy.

**Diagnosis.** Forewings narrow with nearly straight costal margin and a pale subcostal line; externally resembles many other groups of *Eilema* sensu lato. Male genitalia (Fig 22): uncus moderate in width; valvae ovoid, with distinct long ventral process curved upwards and proximally; there is a small broad process on the ventral margin; harpe absent; juxta without apical processes; saccus long; aedeagus without an apical sclerotized fascia or a process at the tip; cornuti cone-like; vesica short, bag-shaped.

## Discussion

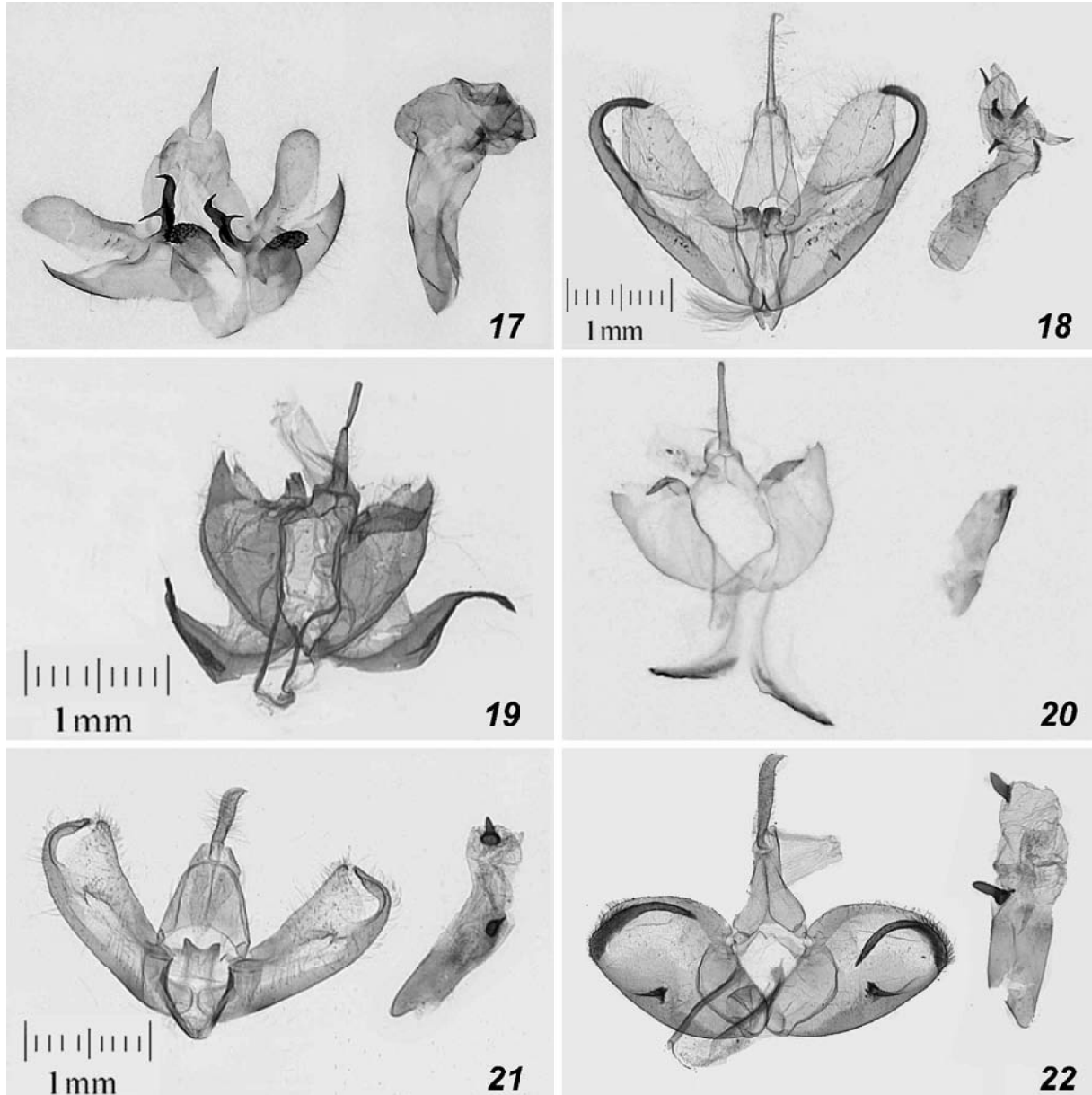
Amongst all cited generic groups, the most remarkable is *Eilema* Hb., s.str. with almost reduced saccular and costal processes; valva became ovoid without any processes (Fig. 9). It is very strange that in many modern guides [de Freina, Witt, 1987; Leraut, 2006; Ylla et al., 2010] male genitalia of the *Eilema* type species were figured incorrectly showing a clear saccular process factually absent. There is at least one more autapomorphic character for *Eilema* Hb.: presence of triangular harpe on the inner surface of valva near its base. Strongly enlarged uncus with narrowly



extended tip is probably also autapomorphic for *Eilema* Hb., however enlarged uncus without such tip sometimes occurs in other species like boreal *atratura* Evermann, 1847 group of species. Taking into account such strong differences between *caniolum* Hb. and other species, it is necessary to separate it from *Eilema* Hb. in a monotypic genus.

The second outstanding group is *Muscula* Koçak (Figs 19–20); it is quite possible that it is a member of

a quite different generic complex of Lithosiinae. Costal part of valvae is entirely reduced; only a basal costal process remains; there is no such structure in other Lithosiini, but presented in *Nudaria* Haworth, [1809] from Nudariini, as well as a simple aedeagus without distinct cornuti and long and slender uncus. On the other hand, transformation of the juxta into two sclerotized apical processes is easily separated this genus from the others.



Figs 17–22. Male genitalia of *Manulea* and similar genera. 17 — *Zobida bipuncta*, Morocco, Atlantic coast, Larache (MWM); 18 — *Wittia sororcula*, Russia, Stavropol Province, North Caucasus, Jutza (Yutskii); 19 — *Muscula muscula*, holotype, Turkey, «südöstlichen Taurus (dem Gjaur-Dagh)» (Zoologisches Museum der Humboldt Universität zu Berlin); 20 — *Muscula prope muscula*, Greece, Strymon Delta (MWM); 21 — *Manulea (Setema) cereola*, Italy, South Tirol, Tauferer-Tal (MWM); 22 — *M. (Agenjoa) lurideola*, Ukraine, Verkhovina (MWM).

Рис. 17–22. Гениталии самцов рода *Manulea* и близких родов. 17 — *Zobida bipuncta*, Марокко, Атлантическое побережье, Лараш (МВМ); 18 — *Wittia sororcula*, Россия, Ставропольский край, Северный Кавказ, Юцкий; 19 — *Muscula muscula*, голотип, Турция, Юго-Восточный Тавр, Джаур-Даж (Zoologisches Museum der Humboldt Universität zu Berlin); 20 — *Muscula muscula*, Греция, дельта Стримон (МВМ); 21 — *Manulea (Setema) cereola*, Северная Италия, Южный Тироль, долина Тауферер (МВМ); 22 — *M. (Agenjoa) lurideola*, Украина, Верховина (МВМ).

Another distinct group is *Prabhasa* Moore (Figs 25–26) with almost fused ventral edges of sacculus of both valvae. This genus and probably a similar *Zadadra* Moore have reduced juxta and transtilla forming an arch above aedeagus — main synapomorphic character for both genera.

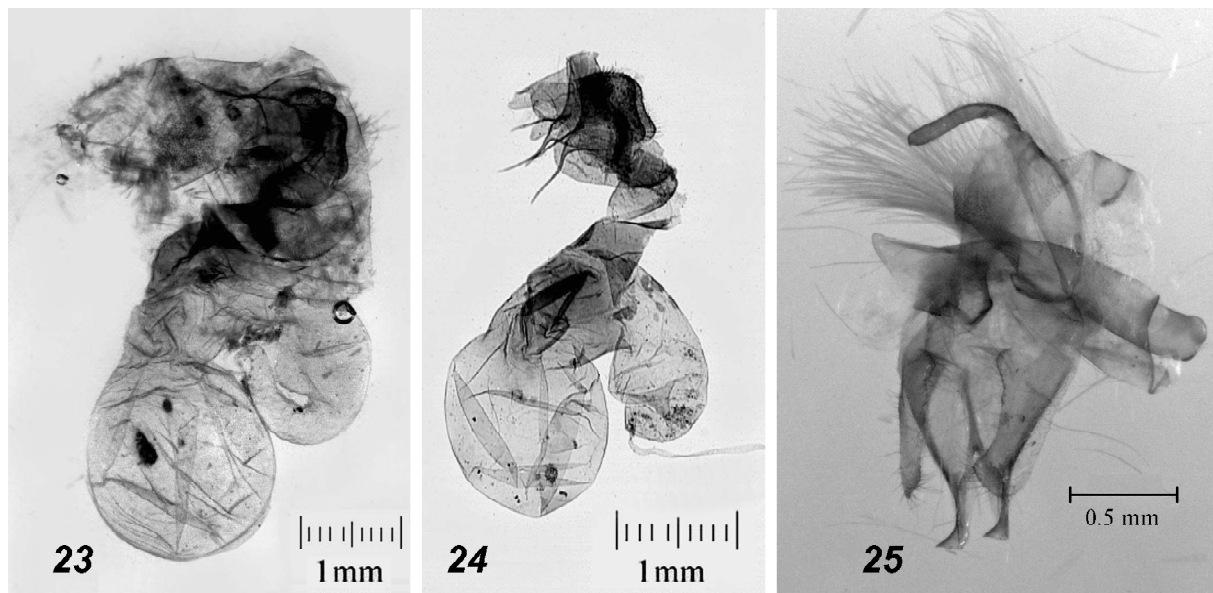
All other species have a distinct saccular process but of different shape: it is slender in *Manulea* Wllgr. (Figs 1–8), *Capissa* Moore (Fig. 14), *Wittia* de Freina (Fig. 18), *Setema* de Freina et Witt (Fig. 21), *Agenjoa* nom.n. (Fig. 22), *Zobida* Birket-Smith (Fig. 17) and broad in *Zadadra* Moore (Figs 27–29), *Tarika* Moore (Fig. 10), *Gandhara* Moore (Fig. 11), *Katha* Moore (Fig. 13), *Collita* Moore (Fig. 12) and *Dolgoma* Moore (Figs 15–16). Among other Lithosiini genera, the sacculus forms narrow strong process in *Macrobrochis* Herrich-Schäffer, 1855, *Cybosia* Hübner, [1819], *Stigmatophora* Staudinger, 1881 and it is wide with one to several apical process(es) in *Ghoria* Moore, 1878, s.str., *Pelosia* Hübner, [1819] and *Lithosia* Fabricius, 1798. Thus, there are no reasons to combine so different species in one genus.

Amongst groups with a broad sacculus (*Tarika* Moore, *Gandhara* Moore, *Katha* Moore, *Collita* Moore and *Dolgoma* Moore), the most distinguishing are *Zadadra* Moore (Figs 27–29) with apical part of sacculus with different arming, and *Dolgoma* Moore (Fig. 15) with an apical part of sacculus being turned down and forming a spinulose bulb. Generic status of this group was accepted by Černý and Pinratana [2009], based on several Thai species. Among Russian species, only *Lithosia cribrata* Staudinger, 1887 from the Amur basin has similar male genitalia structure (Fig. 16) and

should be therefore included into this genus (the first who placed this species in *Dolgoma* Moore, was Kirby, 1892). This group has probably some affinity with Birket-Smith's *Eilema* of Afrotropics [pages 111–115] but this assumption needed in further research. Exact male genitalia structure of *Zadadra* Moore species are not clearly studied yet, so its position with *Prabhasa* Moore is only precursory.

*Tarika* Moore, *Katha* Moore and *Collita* Moore have a common character — a trapezoid saccus concaved apically, but quite different sacculus shape; it is broader than cucullus, with short apical hook in *Tarika* Moore and *Katha* Moore, and trapezoid with distinct process or is angled on ventro-caudal edge in *Collita* Moore. Aedeagus equipment is different in both groups also: there is single strong cornutus in *Katha* Moore, a series of spine-like cornuti in *Tarika* Moore, and a series of cone-like cornuti with additional spinulose zone on vesica in *Collita* Moore. These characters allow to consider *Tarika* Moore, *Katha* Moore and *Collita* Moore as good genera. *Gandhara* Moore differs from the others by short ovoid saccus and, so, presents a distinct genus also.

Between the group with a slender apical process of sacculus, the most remarkable are *Wittia* de Freina (Fig. 18) and *Zobida* Birket-Smith (Fig. 17). The first one has two distinct autapomorphies: very slender and long uncus and a bulb process on inner surface of valva near its base; additionally, the aedeagus with a short apical not sclerotized spur; these characters are easily separated *Wittia* de Freina from other *Eilema* sensu lato species. *Zobida* Birket-Smith has a complex harpe on inner surface of valva separating it from all other *Eilema* sensu lato species.



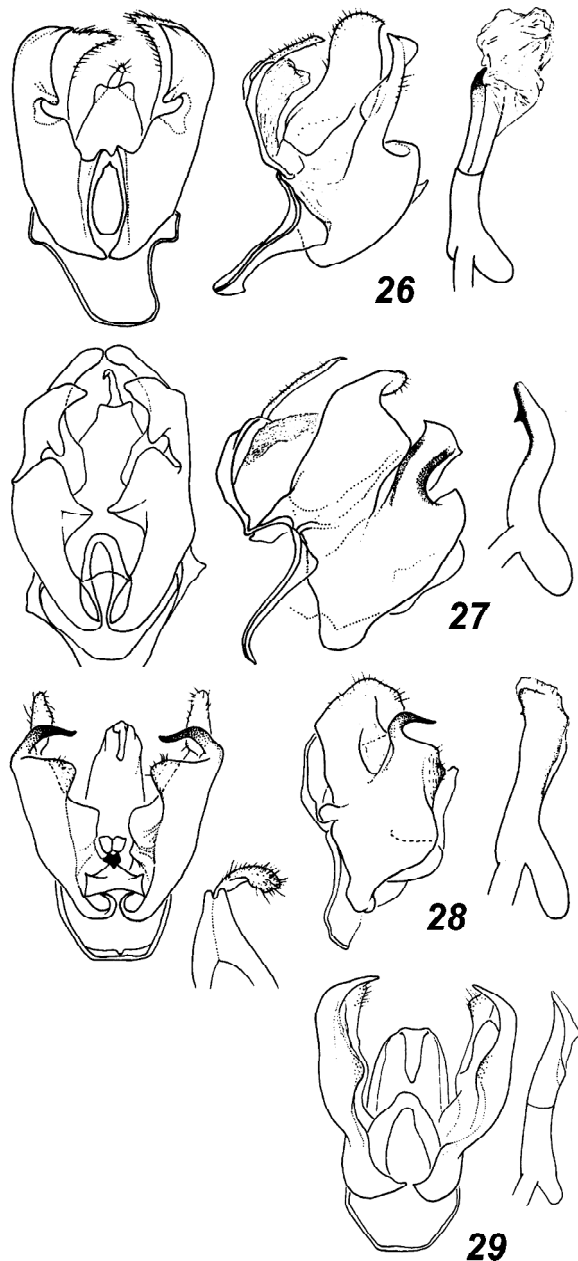
Figs 23–25. Female genitalia of *Manulea* (23–24) and male genitalia of *Prabhasa* (25). 23 — *M. pseudofumidisca* sp.n., paratype, SE Russia, South Primorye, Yakovlevka; 24 — *M. kansuensis*, Russia, Transbaikalia, Buryatia, Ulan-Ude [Verchne-Udinsk] (MWM); 25 — *P. venosa*, China, Guangdong, Nanling, Shaoguan.

Рис. 23–25. Гениталии самок *Manulea* (23–24) и самца *Prabhasa* (25). 23 — *M. pseudofumidisca* sp.n., паратип, ЮВ Россия, Южное Приморье, Яковлевка; 24 — *M. kansuensis*, Россия, Забайкалье, Бурятия, Улан-Удэ [Верхне-Удинск] (МВМ); 25 — *P. venosa*, Китай, Гуандун, Наньлин, Шаогуан.



Amongst Oriental genera, *Capissa* Moore (Fig. 14) is characterized by strongly sclerotized spine attached to the aedeagus tube; this is a good autapomorphic character of generic level.

Between the rest generic groups, *Manulea* Wlgr. (Figs 1–8) and *Setema* de Freina et Witt (Fig. 21) have no distinctive characters: their valva structures are very similar, and cornuti are of similar cone-shape. The single distinguishing character is a presence of andro-



Figs 26–29. Male genitalia of *Prabhasa* and *Zadadra* from Fang [2000]. 26 — *P. plumbeomicans*, China, Yunnan; 27 — *Z. distorta*, China; 28 — *Z. fuscistriga*, China, Yunnan; 29 — *Z. costalis*, China.

Рис. 26–29. Гениталии самцов *Prabhasa* и *Zadadra* по Фань [Fang, 2000]. 26 — *P. plumbeomicans*, Китай, Юньнань; 27 — *Z. distorta*, Китай; 28 — *Z. fuscistriga*, Китай, Юньнань; 29 — *Z. costalis*, Китай.

conial scales on saccus in *Manulea* Wlgr. s.str. (at least in the *complana* group) and their absence in *Setema* de Freina et Witt. The latter authors [de Freina, Witt, 1984] mentioned that *cereola* Hb. females differ from the other «*Eilema*» species; they are smaller with wings also generally smaller and wider and resemble *Setina* Schrank females. However, there is at least one group of northern and mountain tundra species, *Lithosia atratula* Eversmann, 1847, *L. debilis* Staudinger, 1887 (probably also other tundra species, like *Eilema hyalinofuscum* Tshistjakov, 1990, *E. nigrocollare* Tshistjakov, 1990, Canadian «*Tigriones*» *bicolor* Grote, 1864) with not flying brachypterous females and with typical male genitalia structure of *Setema* de Freina et Witt ground plan. Because of absence of distinctive characters we treat both generic names as synonyms and a new synonymy is therefore established there: *Manulea* Wallengren, 1872 = *Setema* de Freina et Witt, 1984, **syn.n.**; hence the latter name can be used as subgeneric within *Manulea* to designate the *cereola* and *atratula* species groups. Similar male genitalia peculiarities (slender sacculus process curved proximally (Fig. 22); it is at least twice so long than in *Manulea*–*Setema* group of species, and there is a short trapezoid process on the ventral edge of valva; these characters are autapomorphies for this group. However, similar uncus structure, and a presence of two cone-like cornuti are common characters closed *Agenjoa* with *Manulea*–*Setema* species. Therefore, this group might be treated as subgenus of *Manulea* Wlgr.

Finally, we are supposing here the following system of the studied species of the *Lithosia*–*Eilema* group, mostly of the Palaearctic fauna.

### Annotated list of *Eilema* sensu lato

Type species of the separate genera are marked with an asterisk (\*).

The species are listed alphabetically for the help of use.

#### *Eilema* Hübner, [1819] 1816

\**Eilema caniolum* (Hübner, [1808] 1796) — southern Europe, north-western Africa, Asia Minor to the Caucasus.

#### *Dolgoma* Moore, 1878

*Dolgoma angulifera* (Felder, 1868), **comb.n.** — India, Thailand.

*Dolgoma cribrata* (Staudinger, 1887), **comb.rev.** — eastern Asia.

*Dolgoma fukienica* (Daniel, 1954), **comb.n.** — south-eastern China.

*Dolgoma klapperichi* (Daniel, 1954), **comb.n.** — southern China.

*Dolgoma lucida* (Fang, 2000), **comb.n.** — south-western China.

*Dolgoma oblitterans* (Felder, 1868) — Himalayas to Yunnan.

*Dolgoma ovalis* Fang, 2000 — China (Shaanxi).

*Dolgoma perdentata* (Druce, 1899), **comb.n.** — south-western China, Malakka.

*Dolgoma recta* Černý, 2009 — Thailand.

\**Dolgoma reticulata* Moore, 1878 — Himalayas [probably a species complex].

*Dolgoma xanthocraspis* (Hampson, 1900), **comb.n.** — eastern India, southern and central China.

**Katha** Moore, 1878

\**Katha deplana* (Esper, 1787) — northern Eurasia.

*Katha rungsi* (de Toulgoët, 1960), **comb.n.** — north-western Africa.

Provisionally, the species of the *nigropoda*-group (e.g., *chekiangica* Daniel, 1954, *conformis* Walker, 1854, *magnata* Matsumura, 1927, *nigropoda* Bremer et Grey, 1853) and also *Eilema rungsi* de Toulgoët, 1960 and *Lithosia laevis* Butler, 1877 are also members of this genus; their relationship to *Gandhara* and *Tarika* need a special investigation.

**Collita** Moore, 1878

(the group was revised by Ignatyev and Witt, 2007)

*Collita chinensis* (Daniel, 1954), **comb.n.** — eastern Asia.

*Collita coreana* (Leech, 1888), **comb.n.** — eastern Asia.

*Collita digna* (Ignatyev et Witt, 2007), **comb.n.** — eastern Asia.

*Collita gina* (Okano, [1955]), **comb.n.** — eastern Asia (Japan).

\**Collita griseola* (Hübner, 1803), **comb.n.** — northern Eurasia.

*Collita okanoi* (Inoue, 1961), **comb.n.** — eastern Asia (Japan and neighboring islands).

*Collita vetusta* (Walker, 1854), **comb.n.** — eastern Asia.

**Wittia** de Freina, 1980

\**Wittia sororcula* (Hufnagel, 1766) — Eurasia.

**Zobida** Birket-Smith, 1965

*Zobida bipuncta* (Hübner, 1823–1824) — south-western Europe, north-western Africa.

*Zobida colon* (Möschler, 1872) — South Africa.

\**Zobida trinitas* (Strand, 1912) (= *jacobsi* Hampson, 1914) — West Africa.

**Manulea** Wallengren, 1872

= *Setema* de Freina et Witt, 1984

Subgenus **Manulea** Wallengren, 1872

**complana species group** (species with androconial scales on saccus):

*Manulea complana* (Linnaeus, 1758), **comb.n.** — temperate zone of the northern Eurasia.

*Manulea costalis* (Zeller, 1847), **comb.n.** — we accept a taxonomic remark by Koçak [1991: 127] and use this name as having a priority (published in March 1847) for *Lithosia morosina* Herrich-Schäffer, 1848 (published at 31. December 1841) — Balkans, Asia Minor.

\**Manulea palliatella* (Scopoli, 1763), **comb.n.** — western and central Eurasia.

*Manulea pseudocomplana* (Daniel, 1939), **comb.n.** — western Eurasia.

**pygmaeola species group** (species with not large cone-like cornuti):

*Manulea affineola* (Bremer, 1864), **comb.n.** — eastern Eurasia.

*Manulea japonica* (Leech, [1889]), **comb.n.** — eastern Eurasia (Japan and neighboring islands).

*Manulea kansuensis* (Hering, 1935), **comb.n.** — Central Eurasia (from Transbaikalia to Gansu).

*Manulea nankingica* (Daniel, 1954), **comb.n.** — eastern Eurasia.

*Manulea omelkoi* Dubatolov et Zolotuhin, **sp.n.** — eastern Eurasia.

*Manulea pygmaeola* (Doubleday, 1847), **comb.n.** — western and central Eurasia.

*Manulea ussurica* (Daniel, 1954), **comb.n.** — eastern Eurasia.

*Manulea wiltshirei* (Tams, 1939), **comb.n.** — south-western Asia (Eastern Mediterranean).

**lutarella species group** (species with large spine-like cornuti):

*Manulea lutarella* (Linnaeus, 1758), **comb.n.** — northern Eurasia.

*Manulea flavociliata* (Lederer, 1853), **comb.n.** — eastern Eurasia (Siberia, the Far East).

**minor species group** (species with a dentate plate on vesica in addition to few not large cone-like cornuti):

*Manulea minor* (Okano, 1955), **comb.n.** — eastern Eurasia (Japan).

*Manulea pseudofumidisca* Dubatolov et Zolotuhin, **sp.n.** — eastern Eurasia.

Subgenus **Setema** de Freina et Witt, 1984 (species without androconial scales on saccus; aedeagus with few not large cone-like cornuti)

**cereola species group** (temperate species; wings in females not reduced):

*Manulea (Setema) cereola* (Hübner, [1800-1803]), **comb.n.** — north-western Eurasia east to Ural Mts.

**atratala species group** (Arcto-Boreal species with brachypterous females):

*Manulea (Setema) atratala* (Eversmann, 1847), **comb.n.** — north-eastern Eurasia.

*Manulea (Setema) debilis* (Staudinger, 1887), **comb.n.** — north-eastern Eurasia.

*Manulea (Setema) hyalinofuscata* (Tshistjakov, 1990), **comb.n.** — north-eastern Eurasia (Chukotka).

*Manulea (Setema) nigrocollaris* (Tshistjakov, 1990), **comb.n.** — north-eastern Eurasia (Upper Kolyma).

*Manulea (Setema) vakulenkoi* (Tshistjakov, 1990), **comb.n.** — north-eastern Eurasia (Siberia).

Subgenus **Agenjoa** Dubatolov et Zolotuhin, **nom.n.**

*Manulea (Agenjoa) lurideola* ([Zincken], 1817), **comb.n.** — northern Eurasia east to Baikal Lake.

*Manulea (Agenjoa) hunanica* (Daniel, 1954), **comb.n.** — eastern Eurasia.

**Muscula** Koçak, 1991

*Muscula muscula* (Staudinger, 1899), **comb.n.** — Asia Minor. In Balkans (Greece) probably occurs a new species (Fig. 20).

*Muscula brevifurca* (Wiltshire, 1957), **comb. et stat.n.** — Asia Minor.

## Descriptions of new species

«*Lithosia fumidisca*» Hampson, 1894  
from East Asia

Plate VII: 2.

*Lithosia fumidisca* Hampson, 1894 was described from female specimen from Sikhim (India), collected by Möschler, and female from Tenasserim Valley (Burma, now Myanmar), collected by Doherty. Few years later, Hampson [1900] designated the specimen from Burma, Tenasserim as the type (lectotype) of this taxon, and added one more female from China, Shanghai, Zika-wei to this species. In the same monograph he published a color figure of the species that was copied by Seitz [1910]. This figure shows *L. fumidisca* with a curious and remarkable wing pattern: dark forewings with wide yellow margin along costa recurving along the outer margin; hindwings yellow. Seitz added Amurland to the distribution of the species, with a remark that it was collected by M. Korb. Based on this record and taking into account few other specimens from the Russian Primorye Territory resembling *fumidisca* in general appearance, Dubatolov et al. [1993] cited this species to the fauna of Russia, namely from Middle Amur (after Seitz [1910]) and Southern Primorye. In last years the occurrence of the species near Khabarovsk in the Bolshekhokhtskii Nature Reserve was affirmed [Dubatolov, Dolgikh, 2009], 100 years later after the first observation by M. Korb in Kazakevitshevo (now at the border of the same Nature Reserve) in 1907. Daniel [1954] re-determined this species as «*Lithosia coreana*» (Leech, 1888), figured its male genitalia (p. 118, fig. 74)

and cited it from Radde (Jewish Autonomous Region, Russia) and several localities in China: Maoershan (Heilongjiang), West Tien-Mu-Shan and Tien-tai-shan (Zhejiang), Hoeng Shan (Hunan), Lungtang near Nanking (Jiangsu). This determination was incorrect because *Collita coreana* is a member of another species group — *griseola* (Hübner, [1803]) [Ignatiev, Witt, 2007], with very different male genitalia structure.

Nevertheless, all modern authors have overlooked that *E. fumidiscum* was described from Burma (Myanmar). The comparison of specimens from Russia and the lectotype, shows that they belong to different species. According to the female genitalia structure (Plate VII: 8) of the *fumidiscus* lectotype, this species is closely related to *Brunia antica* (Walker, 1854) and should be transferred into this genus; probably, both names are synonyms. The description of the new species from the Russian Far East is given below. This species is distributed also in Korea and China (see below).

*Manulea pseudofumidiscus*  
Dubatolov et Zolotuhin, sp.n.

Plate VII: 1.

**Material.** Holotype, ♂, **Russia**, Khabarovsk suburbs, Bolshekhelkhtyrskii Nature Reserve, «Chirki bog» at the bridge across Chirki river near the road to Vladivostok, 48°09' N, 135°08' E, [окр. Хабаровска / Большехелхтирский зап. / 48°09' N, 135°08' E / Чиркинское болото у моста / через р.Чирки по трассе на Владивосток], by light, 26–27.VI.2008, Dubatolov, Dolgikh leg. Preserved in Siberian Zoological Museum of the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk (SZMN ISEA). Paratypes: SZMN ISEA: **Russia**: 3♂♂, the same locality, 26–27.VI, 24–25.VII.2008, Dubatolov and Dolgikh leg.; 1♂, Southern Primorye, Yakovlevka [Южное Приморье, Яковлевка], 17.VII.1981, P.Ya. Ustjuzhanin leg.; 1♀, the same locality, 13–19.VII.1981, P.Ya. Ustjuzhanin leg.; 2♂♂, Nature Reserve «Ussuriiskii» [Уссурийский заповедник], 29.VI 1971, anonymous leg. In the Museum Witt (Munich, Germany): 1♂, Primorye, Fluss Sinantscha, Medvezhij Kut [Приморье, р. Синанча, Медвежий Кут], 14.VII.1976; 1♀, Primorye, 50 km W Lake Chanka, Varabash-Levada [50 км з оз. Ханка, Барабаш-Левада], 14.VII.1984; 1♀, Primorye, Varabash-Levada [Приморье, Барабаш-Левада], 44.258°N, 131.24° E, leg. Nikolaev; 1♂, Far East, Sikhote Alin Mts., Kamenushka [Сихотэ-Алинь, Каменушка], 43°37' N, 132°16' E, 1–5.VII.1990. leg. Z. Weidenhoffer; 1♂, Primorye, Dorf Kamenushka [Приморье, Каменушка], VII 193, LF; 1♂, Far East, Sikhote Alin Mts., Yasnoe [Сихотэ-Алинь, Ясное], 43°40' N, 134°00' E, 9–14.VII.1990. leg. Z. Weidenhoffer; 1♂, S-Primorye, Anissimovka [Южное Приморье, Анисимовка], 29–30.VI.1991, leg. Jürivete: 1♂, Russia, Primorye, Pogranitchnyj [Приморье, Пограничный], 44°25' N, 131°24' E, 19–30.VI.1992; 16♂♂, 4♀♀, Russia, Far East, Ussurijsk circ., Zarechnoe vill. [окрестности Уссурийска, Заречное], 7.VII–5.VIII.1994, leg. A. Belov (GU Prep. 11000–11004); **North Korea**: 1♀, 6 km E Naegu, 10–18.VI.1985, leg. E. Palik.

**Description.** Male. Forewing length 10.3–11.7 mm, its costal edge is straight. Forewings dark grayish brown, with wide bright yellow costal margin that is recurved along the outer margin up to the tornal part. Cilia is also bright yellow. Hindwings are yellow, only slightly lighter than forewing margination. Head, patagiae and tegulae are bright yellow, thorax — dark gray. Abdomen is yellow. Female larger than males, with forewing length 13.9 mm.

Male genitalia. Uncus long, terminally acute. Tegumen is nearly roundly quadrangular. Valvae membranous, elongate, apically rounded. Saccus strongly sclerotized forming fluently curved and pointed process that is not longer than the valvar apex. Saccus trapezoid in shape. Aedeagus with 5 cornuti of taper shape, one of them being smaller, the latter cornutus looks like a dentate sclerotized plate.

Female genitalia. Postvaginal plate slightly sclerotized, convex, close the vaginal sinus. Ductus bursae rugose, arcuated, slightly sclerotized on right side, membranose on left side. Ductus seminalis arcuated, originate from ductus bursae left side, with strong widening at middle part, then strongly contracted. Bursa copulatrix globular, on ventral side with large oval signa on ventral side, on dorsal side — with two smaller one, one of them is twice smaller than another.

**Diagnosis.** The new species strongly resembles «*Lithosia*» *fumidiscus* from Myanmar by general appearance, but the apical edge of the dark field of ground colour on forewings is broadly rounded, while in the «*L.*» *fumidiscus* lectotype, it is pointed towards the wing apex; also, the costal edge is noticeably convex in this species. There is one more similar species from Japan, *Manulea minor* (Okano, [1955]) (Plate VII: 5): its forewings are also dark with yellow costal margin that is recurved along outer margin, but this margination is very narrow; moreover, tegulae in this species are dark as the thorax, yellow at their bases only. The new species has male genitalia general pattern as in the type species of genera *Manulea* Wallengren, 1863, *M. palliatella* (Scopoli, 1763) and *Setema* de Freina, 1984, *S. cereola* (Hübner, [1803]): narrow and strongly sclerotized sacculus forming a long curved dorsally process and is very different from the type species of the genus *Eilema* Hübner, [1819], *E. caniolum* (Hübner, [1808]) that has oval valva without any formed process. Male genitalia of *M. minor* (Okano) and *M. pseudofumidiscus* sp.n. are more similar by the presence of convex juxta and a spine bearing cornutus; both species differ by number of taper cornuti: 3 in *M. minor* (Okano) and 4–5 in the new species.

**Дифференциальный диагноз.** Новый вид по внешности очень напоминает «*Lithosia*» *fumidiscus* из Бирмы (Мьянма), но вершинный край тёмного поля сверху передних крыльев широко округлён, тогда как у лектотипа «*L.*» *fumidiscus* тёмное поле заостряется к вершине крыла. Кроме того, костальный край у «*L.*» *fumidiscus* заметен изогнут. Есть ещё один похожий вид из Японии, *Manulea minor* (Окано, [1955]) (вклейка VII: 5), у которого тёмное поле на передних крыльях у вершины крыла округлено, но жёлтый край крыльев очень узкий. Более того, тегулы *Manulea minor* тёмные, как и спинка, жёлтые только в основании. Гениталии самца нового вида имеют общий план строения, характерный для *Manulea* Wallengren, 1863, типовой вид *M. palliatella* (Scopoli, 1763), и *Setema* de Freina, 1984, типовой вид *S. cereola* (Hübner, [1803]) с узким и сильно склеротизованным саккулюсом, образующим длинный изогнутый вверх отросток, и очень отличен от типовой вида рода *Eilema* Hübner, [1819], *E. caniolum* (Hübner, [1808]), обладающего овальной вальвой без каких-либо отростков. Наиболее близки они по строению к гениталиям *M. minor* (Окано) по выпуклой юксте и наличию шиповатого корнутуса; различаются они по числу остальных конусовидных корнутусов: их 3 у *M. minor* (Окано) и 4–5 у нового вида.

**Taxonomic remarks.** According to genitalia structure, it is possible to compare the new species with the «*L.*» *fumidiscus* type (a female).

In the female genitalia, the new species differs distinctly from the «*L.*» *fumidiscus* type in wide bulla that is less than twice smaller than corpus bursae, and no bulla in «*L.*» *fumidiscus*. Moreover, the latter species has sclerotized widening of distal part of ductus bursae, that is absent in this new species. Such evident differences show that both species

belong to different species groups, or even to different genera. Unfortunately, male genitalia of «*L.*» *fumidisca* are still unknown, and it is impossible to find its correct generic position.

The specimens of this species were incorrectly identified by F. Daniel as *Lithosia coreana* Leech (a species from a quite different group) and were ordered under this name in most collections (ZSM, ZFMK, MWM). We attributed such moths from different locations of China (Chekiang [Zhejiang]: West Tien-Mu-Shan, 1600 m; Hunan: Hoeng-Shan, 900 m; Kiangtsu [Gansu]: Lungtan bei Nanking) to the new species but not included them in the paratype series; their status should be treated by special investigations.

*Manulea omelkoi*

Dubatolov et Zolotuhin, **sp.n.**

Plate VII: 3, 6.

**Material.** Holotype, ♂, **Russia**, Primorskii Krai, 18 km SE from Ussuriisk, Gornotaezhnoe, dendrarium, in light trap [«Приморский край / 18 км ЮВ Уссурийска / Горнотаежное, дендра- / рий, на светоловушку»], 8.VIII.1995, V.V. Dubatolov leg. Preserved in Siberian Zoological Museum of the Institute of Systematics and Ecology of Animals SB RAS, Novosibirsk (SZMN ISEA). Paratypes: SZMN ISEA: 5♂♂, the same label and data as in holotype; 2♂♂, Primorskii Krai, Khanka District, 5 km N from Novokachalinsk, Mt. Kachalovka [Приморский край, Ханкай- / ский район, 5 км С Новока- / чалинска, сопка Качаловка, / разрежен. дубняк, старая / гарь, на свет], open oak forest, by light, 22.VII.1995, V.V. Dubatolov leg. In the Museum Witt (Munich, Germany): [RUSSIA] S. Primorye, Razdolnoje [Южное Приморье, Раздольное], 43°30' N, 131°52' E, 13–14.VII.1982, leg. Lindt (No. 11.009 in MWM).

**Description.** Male. Forewing length 9.5–11.1 mm, its costal edge straight, apex rounded. Wings unicolourously yellow. Head, patagia and tegulae, thorax, and abdomen yellow.

Male genitalia. Uncus long, terminally acute. Tegumen quadrangular with rounded angles. Valvae membranous, elongate, apically contracted. Saccus strongly sclerotized forming fluently curved and pointed process that is not longer than the valva apex. Saccus long, trapezoid shape. Aedeagus with two strong and two small cone-like cornuti.

**Diagnosis.** By forewing shape and colouration, the new species looks like a small *Wittia sororcula* (Hufnagel, 1766). Nevertheless, male genitalia structure shows affinity with *Manulea* Wlgr. – *Setema* de Freina et Witt group. Two other Far Eastern species might be mixed with the new one by unicolorously light yellowish wings of males: *M. affineola* Brem. and *M. nankingica* Daniel. However, the first one has five small cornuti on vesica and the latter has three larger cornuti.

**Дифференциальный диагноз.** По форме передних крыльев и окраске новый вид напоминает мелкую *Wittia sororcula* (Hufnagel, 1766). Тем не менее, строение генитального аппарата показывает значительное сходство с группой *Manulea* Wlgr. – *Setema* de Freina et Witt. Два других дальневосточных вида могут быть спутаны с новым видом по одноцветно жёлтым крыльям самцов: *M. affineola* Brem. и *M. nankingica* Daniel. Тем не менее, у первого вида пять мелких корнутусов на везике, а у второго — три более крупных.

## New faunistic records

*Manulea kansuensis* (Hering, 1936)

Plate VII: 4.

*Eilema lurideola kansuensis* Hering, 1936; Arkiv Zool. 27A (32): 5. Type locality: «S. Kansu» [China: Gansu]. Holotype: ♂ (Riksmuseet Stockholm).

=*Lithosia innshanica* Daniel, 1939, **syn.n.**; Mitt. Münchner. entomol. Gesellschaft 29: 50. Type locality: «Inn Shan, Chingan mont., Mongolei or. 2000 m» [China: Nei Mongol]. Holotype: ♀ (Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn).

=*Lithosia japonica brunnescens* Daniel, 1954; Bonn. zool. Beiträge 5 (1–2): 101. Type locality: «Tapaishan im Tsinling, Sued-Shensi, ca 1700 m» [China: Shaanxi]. Holotype: ♂ (Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn).

*Lithosia japonica*, sensu Daniel, 1954: 101 (Transbaikal: Werkhne Udinsk) [Russia, Buryatia: Ulan-Ude].

*Eilema lurideolum*, sensu Dubatolov, Brinikh, 1999: 237 ([Russia, Chita Province, Dahurian Nature Reserve], Nizhnii Tsasuchei); Dubatolov et al., 2004: 316 ([Russia, Chita Province, Sokhondo Nature Reserve] Kordon Agutsa).

**Material.** **Russia: Irkutsk Province:** 1♀, 40 km ME from Irkutsk, Kuda river right bank opposite to the Kuyada river mouth, 2.VIII.1984 (Dubatolov leg., SZMN ISEA); **Buryatia:** 1♂, Tazhnyi, 30.VII.1984 (Ustjuzhanin leg., SZMN ISEA); 1♀ (No 11072 MWM), Werchne-Udinsk, now — Ulan-Ude, 22.VIII.1917 (Biener leg., Smml. F. Daniel, Museum Witt); **Chita Province:** 2♀♀, Kyra, 11.VIII.1991 (Dubatolov leg., SZMN ISEA); 2♂♂, the same locality, 900 m, 14–15.VII.1997 (I. Kostjuk, O. Kostjuk, A. Bidzilja leg.); 2♂♂, Onon District, Nizhnii Tsasuchei, 19.VII, 31.VII.1996 (Dubatolov leg., SZMN ISEA); 4♂♂, Ust'-Aginskii Region, 7 km WNW from Nizhnii Tsasuchei, Malyi Batur, Onon river bottomland, 16.VII.2002 (Dubatolov leg., SZMN ISEA); 1♂, East Transbaikalia, Kuenga, 45 km SW of Sretensk, lum., 18.VII.1993 (I. Kostjuk leg.); 1♂, East Transbaikalia, Shara, 90 km NW of Priargunsk, lum., 25.VII.1993 (I. Kostjuk leg.). **Mongolia:** 1♂ (No. 11073 MWM), Bulgan aimak, 7 km NW von Somon Chanzargalant, 1350 m, 22.VII.1968, Exp. Dr. Z. Kaszab; 1♂ (No. 11074 MWM), Cojbalsan aimak, 20 km SW von Somon Bajan-uul, 820 m, 8.VIII.1965, Exp. Dr. Z. Kaszab.

**Remarks.** For the long time the specimens of this species had been wrongly determined as *Eilema lurideolum* [Zinck.]. However, male genitalia of these species are very different and belong to separate subgenera; Daniel mistakenly attributed the species to *japonica* Leech in spite of significant differences: *japonica* has the juxta with a long apical process. There is a variability in cornuti number in *M. kansuensis* Hering: four (typical for the species) or three, the latter specimens were described as subspecies *brunnescens* Daniel. We consider this is only an infraspecific variability. Three cornuti is not a character of brownish specimens described as *brunnescens* Daniel, 1954, and sometimes they occur in specimens with dark forewings from Transbaikalia thus there is no reason to separate *brunnescens* Daniel as a geographical subspecies, because the type localities of *kansuensis* Hering (southern Gansu) and *brunnescens* Daniel (southern Shaanxi) are most closely located to each other than other localities of this species. Moreover, forewing coloration variability (from dark to light tone) is a common character in some *Manulea* species, like *M. palliatella sericeoalba* Rothschild in Kopetdagh Mts. and *M. flavociliata* Led. in South Siberian mountains.

*M. kansuensis* Hering is recorded to Russia and Mongolia for the first time.

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**Вклейка VII ❖ Plate VII**

V.V. Dubatolov, V.V. Zolotuhin. P.367–379. Plate VII: 1–8. *Manulea* and similar genera, moths (1–7) and female genitalia (8). 1 — *Manulea pseudofumidisca* sp.n., holotype, SE Russia, Khabarovsk suburbs; 2 — *Brunia fumidisca*, female, holotype, «Burmah, Tenasserim Valley, E of Tovoу» (BMNH); 3 — *Manulea omelkoi* sp.n., holotype, SE Russia, South Primorye, Gornotaezhnoe; 4 — *M. kansuensis*, holotype, «Kina, S. Kansu» (Riksmuseet Stockholm); 5 — *M. minor*, Japan, Mt. Ariake (SZMN); 6 — *M. omelkoi* sp.n., paratype, SE Russia, South Primorye, Razdolnoe (MWM); 7 — *Prabbasa venosa*, China, Guangdong, Nanling, Shaoguan; 8 — *Brunia fumidisca*, female, holotype (BMNH).

В.В. Дубатов, В.В. Золотухин. С.367–379. Вклейка VII: 1–8. *Manulea* и близкие рода, бабочки (1–7) и гениталии самок (8). 1 — *Manulea pseudofumidisca* sp.n., голотип, ЮВ Россия, окрестности Хабаровска; 2 — *Brunia fumidisca*, самка, голотип, Бирма, долина Тенассерим, восточнее Товой (BMNH); 3 — *Manulea omelkoi* sp.n., голотип, ЮВ Россия, Южное Приморье, Горнотаежное; 4 — *M. kansuensis*, голотип, Китай, юг Ганьсу (Riksmuseet Stockholm); 5 — *M. minor*, Япония, гора Ариаке (SZMN); 6 — *M. omelkoi* sp.n., паратип, ЮВ Россия, Южное Приморье, Раздольное (MWM); 7 — *Prabbasa venosa*, Китай, Гуандун, Наньлин, Шаогуан; 8 — *Brunia fumidisca*, самка, голотип (BMNH).

Н.В. Владимирова. С.361–367. Вклейка VII: 9. Местобитания Северо-Восточного Алтая, предпочитаемые разными видами высших поровых орибатид (2002, 2006 гг.).

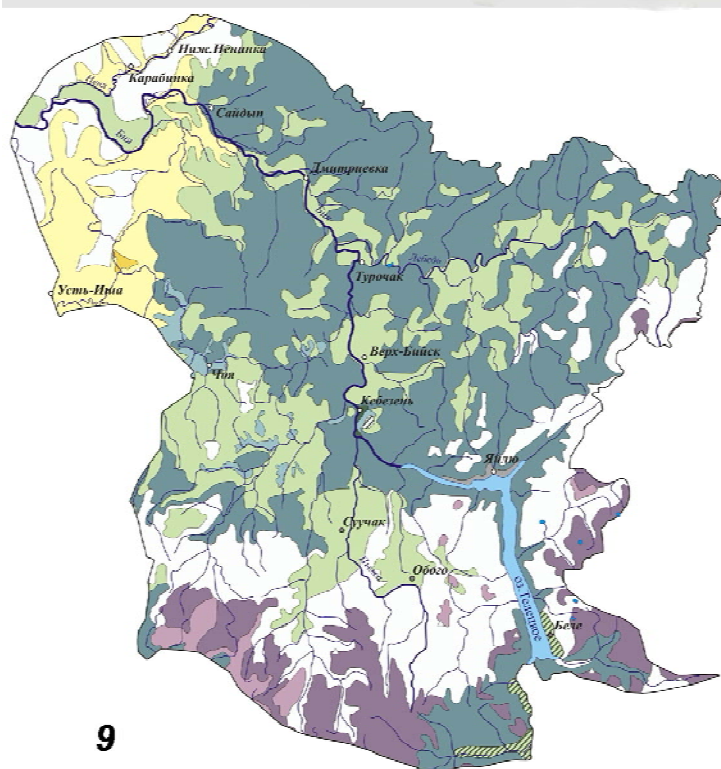
N.V. Vladimirova. P.361–367. Plate VII: 9. Habitats of North-Eastern Altai, prefer different species of oribatid mites (2002, 2006).

**Вклейка VIII ❖ Plate VIII**

M. Lin, M.L. Danilevsky. P.381–382. Plate VIII: 1–9. — *Eodorcadion (Ornatodorcadion)* spp., habitus of beetles: 1–2 — *E. jakovlevi fangzhoui*, ssp. n.: ♂, holotype, IZAS (1); ♀, paratype, IZAS (2); 3–5 — *E. kaznakovi zbilini*, ssp. n., ♂♂: holotype, IZAS (3), paratypes, IZAS (4–5); 6–9 — *E. kaznakovi kaznakovi*, ♂♂, China, Inner Mongolia, S. Murzin leg., SM: E Bayn Hot, 25.7.2011 (6); 5 km S Bayan Hot, 30.7.2011 (7); 5 km S Bayan Hot, 18–23.08.2011 (8–9).

М. Лин, М.Л. Данилевский. С.381–382. Вклейка VIII: 1–9. *Eodorcadion (Ornatodorcadion)* spp., габитусы жуков: 1–2 — *E. jakovlevi fangzhoui*, ssp. n.: ♂, голотип, IZAS (1); ♀, паратип, IZAS (2); 3–5 — *E. kaznakovi zbilini*, ssp. n., ♂♂: голотип, IZAS (3), паратипы, IZAS (4–5); 6–9 — *E. kaznakovi kaznakovi*, ♂♂, China, Inner Mongolia, S. Murzin leg., SM: «E Bayn Hot, 25.7.2011» (6); «5 km S Bayan Hot, 30.7.2011» (7); «5 km S Bayan Hot, 18–23.08.2011» (8–9).





- Типы преференции:
- 1 – предгорный лесолуговой;
  - 2 – предгорный болотный;
  - 3 – низогорно-среднегорный хвойно-мелколиственно-лесной с проникновением на низогорные болота, в предгорные болота и леса;
  - 4 – низогорный сосново-беровой;
  - 5 – низогорный разреженно-лесной;
  - 6 – низогорный сосново-березовый лесной прителецкой;
  - 7 – низогорный лесной дигрессионный;
  - 8 – низогорно-среднегорный таёжный;
  - 9 – среднегорно-высокогорный ерпиково-редколесный;
  - 10 – среднегорно-высокогорный петрофильно-тундровый.
- △ ○ Местообитания, не предпочитаемые орибатидами

Характеристики приведены в классификации

