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Two new species of the genus *Bembecia* Hübner, 1819 ["1816"] (Lepidoptera: Sesiidae) from Western Mongolia

Два новых вида рода *Bembecia* Hübner, 1819 ["1816"] (Lepidoptera: Sesiidae) из Западной Монголии

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КЛЮЧЕВЫЕ СЛОВА. Lepidoptera, Synanthedonini, бабочки-стеклянницы, *Bembecia khovdensis*, *Bembecia yakovlevi*, систематика, новый вид, Палеарктический регион, Монголия.

ABSTRACT. *Bembecia khovdensis* **sp.n.** and *Bembecia yakovlevi* **sp.n.** from the western part of Mongolia is described and illustrated. The first new species is most similar to *B. volgensis* O. Gorbunov, 1994, but differs from it in the colour of the vertex, patagia, fore coxa and abdomen, and in the shape of the transparent areas of the forewing. The second new species seems to be close to *B. sareptana* (Bartel, 1912), but is separable from it by the colouration of the thorax laterally, forewing dorsally and abdomen. In addition, these two species have some differences in the male genitalia. The host plants of the larvae of these two new species remain unknown.

РЕЗЮМЕ. Приведено описание *Bembecia khovdensis* **sp.n.** и *Bembecia yakovlevi* **sp.n.** из западной части Монголии. Первый новый вид наиболее близок к *B. volgensis* O. Gorbunov, 1994, но отличается от него в окраске темени, патагиального воротничка, передней коксы и брюшка, а также в строении прозрачных полей переднего крыла. Второй новый вид, по-видимому, близок к *B. sareptana* (Bartel, 1912), но отличается от него окраской груди с боков, переднего крыла сверху и брюшка. Кроме того, эти два вида имеют некоторые различия в гениталиях самцов. Кормовые растения гусениц этих двух новых видов остаются неизвестными.

Introduction

The genus *Bembecia* Hübner, 1819 ["1816"] is the largest sesiid genus of the tribe Synanthedonini. It is restricted to the Palaearctic region. However, two taxa of the genus were described from the Arabian Peninsula, namely *Pyropteron balkis* Le Cerf, 1937 (type locality: [Yemen] "Arabia, San'a Waila, …") (transferred to the genus *Bembecia* by Heppner, Duckworth, 1981: 39) and *Bembecia balkis atrocaudata* Wiltshire, 1986 (type locality: "Saudi Arabia, Taif, …") [Gorbunov *et al*., 2017; Gorbunov, Efetov, 2018; Gorbunov, 2018, 2019, 2023]. Unfortunately, the genitalia of these two taxa have not yet been studied, and it is rather difficult to establish a generic affiliation only by appearance. Therefore, I consider their inclusion in the genus *Bembecia* conditional.

The first mention of the clearwing moths of Mongolia was published only by the famous German lepidopterist Otto Staudinger in 1896 in his work "Ueber Lepidopteren von Uliassutai" [Staudinger, 1896]. Here the author provides information on three species of Sesiidae, of which two species belong to the genus *Bembecia*, namely *B. ceiformis* (Staudinger, 1881) and the newly described *B. tristis* (Staudinger, 1896).

The famous Hungarian coleopterist Zoltan Kaszab [1915–1986] worked annually in Mongolia from 1963 to 1968. During his six expeditions, he visited almost all regions of Mongolia, while all his routes were described in detail in separate articles [Kaszab, 1963; 1965a–b; 1966; 1968a–b]. This greatly facilitates the collection and processing of faunal data. All materials obtained during the expeditions, which are more than 450 thousand specimens of insects, including 41282 butterflies [Kaszab, 1968b], of which the vast majority turned out to be common species of Noctuidae and Geometridae, were taken to the Hungarian National Museum of Natu-

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ral History [Kerzhner, 1972]. Based on the materials of these expeditions, more than five hundred works were published. The clearwing moths from the collections of the Kaszab expeditions were studied and published by the Romanian entomologist Iosif Căpuşe (1935–1999). In total, Kaszab collected 8 specimens of Sesiidae, which Căpuşe published as one new genus *Scalarignathia* Căpuşe, 1973 and six new species [Căpuşe, 1973], four of which belong to the genus *Bembecia*.

The following information about clearwing moths of Mongolia was published in the results of the Mongolian-German biological expedition, which took place in the 60s –70s of the last century. The expedition managed to collect only *Synanthedon formicaeformis* (Esper, 1783) at three localities in the Khovd Aimag [Alberti, 1971; Grosser, 1982].

The next indication of the Sesiidae from Mongolia was the inclusion of two males and one female in the type series of *Synanthedon herzi* Špatenka et O. Gorbunov, 1992 [Špatenka, Gorbunov, 1992].

In the monograph on Palearctic clearwing moths, in addition to the above mentioned species, *Synanthedon polaris* (Staudinger, 1887) was also reported to Mongolia (Špatenka *et al*., 1999).

And, finally, the last work on Mongolian Sesiidae, before this publication, was a report on an expedition conducted by Karel Špatenka (1955–2021) in 2000. During the expedition, seven species were collected, two of which turned out to be new, namely *Bembecia oxytropidis* Špatenka et Lingenhöle, 2002 and *B. gobica* Špatenka et Lingenhöle, 2002.

Thus, before the present study, only 15 species of clearwing moths were noted in the fauna of Mongolia, of which seven belong to the genus *Bembecia*.

Material and methods

The descriptions of the specimens were made using a Leica EZ4 stereomicroscope with LED illumination. All images of the types were taken with a Sony® α450 DSLR camera equipped with a Minolta® 50 mm f/2.8 Macro lens. Figure 13 was taken using a Konica Minolta Dynax 5D with a Minolta® 50 mm f/2.8 Macro lens, while figure 14 was taken using a Canon PowerShot A650 IS. The genitalia were photographed using a Keyence® BZ-9000 Biorevo Fluorescence Microscope. The processing of all illustrations was finalized using Adobe® Photoshop® CC2020 software.

All labels of the holotypes are cited verbatim. The labels with geographical data, data on photos and preparation numbers of the genitalia are printed on white paper, but the type label of the holotypes are printed on red paper. Each label is separated by a semicolon (“;”) lines in a label are separated by a slash (“/”). All pictures of specimens are labelled with a number, consisting of letters and digits: name of the family, two consecutive digits separated by an n-dash and a year following the m-dash (e.g. SESIIDAE pictures Nos 0033-0034–2023). These letters and digit codes correspond to the numbering system of the figured specimens in the author’s archive. Each preparation of the genitalia is stored in a microtube with glycerol pinned under the specimen. The dissected genitalia are equipped with the corresponding number placed in the microtube. This number as a label (e.g. Genitalia preparation No OG–003-2022) is pinned under the specimen and listed in the author’s archive.

The types are kept in the collection of the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia (COGM).

Taxonomic account

Bembecia (s. str.) *khovdensis* O. Gorbunov, **sp.n.**
Figs 1–2, 5–9, 15

MATERIAL. **Holotype** ♂ (Figs 1–2) with labels: “Mongolia, Khovd Aimag, / 8 km N Uyench, / 1800 m, 46°07′N, 092°03′E, / 22.VI.2007, / O. Gorbunov leg.”; “SESIIDAE / Pictures Nos / 0033-0034–2023 / Photo by O. Gorbunov”; “Genitalia examined / by O. Gorbunov / Preparation No OG–008-2023”; “HOLOTYPUS ♂ / *Bembecia khovdensis* / O. Gorbunov, 2023 / O. Gorbunov des., 2022”.

DESCRIPTION. **Male** (holotype) (Figs 1–2). Alar expanse 14.9 mm; body length 9.0 mm; forewing length 6.9 mm; antenna length 3.8 mm.

Head: antenna black with dark blue shine, scapus black exterior-dorsally and pale yellow interior-ventrally; frons pale yellow with few gray-brown scales medially; labial palpus with long hair-like scales ventrally, pale yellow and narrowly black exterior-ventrally; vertex black with dark blue shine; occipital fringe pale yellow to white; neck plate pale yellow with few gray-brown scales with blue shine distally.

Thorax: patagia black with blue-violet shine, admixture of pale yellow scales anteriorly and small pale yellow spot laterally; tegula black with blue-violet shine, small pale yellow spot at base of forewing and few pale yellow scales both posteriorly and at inner margin anteriorly; both meso- and metathorax black with dark greenish-blue shine; besides this, tegula, meso- and metathorax densely covered with white, long, hair-like scales; thorax laterally dark gray-brown with bright blue shine and large yellow spot with golden shine anteriorly; both metepimeron and metameron posteriorly black with dark violet shine densely covered with white, long, hair-like scales.

Legs: fore coxa dark brown to black with blue-bronze shine, densely covered with white, long, hair-like scales and narrowly pale yellow at margins; fore femur dark brown to black with blue-bronze shine and dense admixture of pale yellow scales and white, long, hair-like scales at posterior margin; fore tibia pale yellow to yellow with few black scales dorsally; fore tarsus pale yellow to yellow with golden shine; mid coxa dark brown to black with blue-bronze shine; mid femur dark brown to black with blue-bronze shine and dense admixture of pale yellow scales and white, long, hair-like scales at posterior margin; mid tibia dark brown to black with bronze shine and large yellow with golden shine spot exterior-medially and admixture of pale yellow scales internally; spurs pale yellow with golden shine; mid tarsus completely pale yellow to yellow with golden shine; hind coxa dark brown to black with blue-bronze shine and admixture of pale yellow scales; hind femur dark brown to black with blue-bronze shine and dense admixture of pale yellow scales and

white, long, hair-like scales at posterior margin; hind tibia pale yellow to yellow with golden shine and dark brown to black scales with bronze shine basally, ventrally from base to base of mid spurs and at base of apical spurs; spurs pale yellow with golden shine; hind tarsus completely pale yellow to yellow with golden shine.

Forewing dorsally with basal part black with bright greenish shine; costal margin brown with bronze shine and thin pale yellow line between veins Sc and R-stem; Cu-stem and anal margin yellow with golden shine and admixture of brown scales with bronze shine; discal spot trapeziform, black with dark violet shine; veins distally of discal spot yellow with admixture of brown scales distally; ventrally forewing yellow, discal spot and surface between veins R_1 and R_3 dark brown with bronze shine; transparent areas undeveloped, completely covered with yellow scales with golden hue; cilia dark brown with bronze shine.

Hindwing transparent but densely covered with translucent and yellowish scales with light golden hue dorsally and bluish hue ventrally; dorsally veins, discal spot and outer margin brown with bronze shine and admixture of individual yellow scales; ventrally veins, discal spot and outer margin yellow with admixture of brown scales with bronze shine, more dense on Cu-stem and veins M_3 and CuA_1; discal spot cuneiform, reaching base of common stem M_3–CuA_1; outer margin relatively broad, about 0.5 times as broad as cilia; cilia dark brown with bronze shine.

Abdomen dark brown to black with bright blue shine; dorsally tergite 2 with narrow yellow stripe with golden shine distally; tergites 4 and 5 each with broad yellow stripe with golden shine distally; tergites 6 and 7 each nearly completely yellow with golden shine; ventrally sternite 1+2 with narrow yellow stripe with golden shine distally; sternite 3 with few yellow scales medially; sternite 4 completely yellow with golden shine; sternites 5–7 each with broad yellow stripe with golden shine distally; anal tuft well-developed, dorsally lateral parts black with bronze-violet shine, medial part yellow with golden shine; ventrally yellow with golden shine.

Male genitalia (paratype; genital preparation No OG–008-2023) (Figs 5–9). Tegumen-uncus complex relatively narrow; scopula androconialis well-developed, about 0.6 times as long as tegumen-uncus complex (Fig. 5); crista gnathi medialis semicircular, long, broad and poorly sclerotized in basal half; crista gnathi lateralis subcordiform, about half as long as and slightly narrower than crista gnathi medialis (Fig. 5); valva (Fig. 6) trapeziform-ovoid, crista sacculi oblique, covered with apically pointed setae anteriorly and flat-topped ones posteriorly; caudal part of row of setae bent towards ventral margin; saccus (Fig. 7) relatively narrow, long, about twice as long as vinculum; phallus (Fig. 8) rather narrow, straight, about as long as valva; vesica with numerous small cornuti (Fig. 9).

Female. Unknown.

INDIVIDUAL VARIABILITY. Unknown.

DIFFERENTIAL DIAGNOSIS. Both superficially and by the structure of the male genitalia, this new species seems to be closest to *B. volgensis* O. Gorbunov, 1994 (type locality: Russia, Ulianovsk Region, 160 km S of Ulianovsk, Ryabina), from which it can be distinguished by the colouration of the vertex (black mixed with yellow scales in *B. volgensis*, *vs*.

Figs 1–4. *Bembecia* spp. 1–2 — *Bembecia khovdensis* O. Gorbunov, **sp.n.**, holotype ♂, alar expanse 14.9 mm. Sesiidae picture Nos 0033-0034–2023; 3–4 — *Bembecia yakovlevi* O. Gorbunov, **sp.n.**, holotype ♂, alar expanse 21.4 mm. Sesiidae picture Nos 0027-0028–2023. 1, 3 — dorsal view; 2, 4 — ventral view.

Рис. 1–4. *Bembecia* spp. 1–2: *Bembecia khovdensis* O. Gorbunov, **sp.n.**, голотип ♂, размах крыльев 14.9 мм. Sesiidae снимки №№ 0033-0034–2023; 3–4 — *Bembecia yakovlevi* O. Gorbunov, **sp.n.**, holotype ♂, размах крыльев 21.4 мм. Sesiidae снимки №№ 0027-0028–2023. 1, 3 — вид сверху; 2, 4 — вид снизу.

completely black in the new species), patagia (black with violet shine dorsally and pale yellow laterally in *B. volgensis*, *vs*. black with blue-violet shine, admixture of pale yellow scales anteriorly and small pale yellow spot laterally in *B. khovdensis* **sp.n.**), fore coxa (black with violet shine, densely covered with yellow, long, hairy-like scales and broadly white at exterior margin in the species compared, *vs*. dark brown to black with blue-bronze shine, densely covered with white, long, hair-like scales and narrowly pale yellow at margins in *B. khovdensis* **sp.n.**), abdomen (black with greenish-violet shine; dorsally tergite 2 with narrow pale yellow stripe distally; tergites 4, 6 and 7 each with broad pale yellow to yellow stripe distally; tergite 5 with admixture of pale yellow scales medially; ventrally sternites 1+2 and 3 each with few pale yellow scales; sternites 5–7 each with more numerous pale yellow scales; sternite 4 entirely pale yellow in *B. volgensis*, *vs*. dark brown to black with bright blue shine; dorsally tergite 2 with narrow yellow stripe with golden shine distally; tergites 4 and 5 each with broad yellow stripe with golden shine distally; tergites 6 and 7 each nearly completely yellow with golden shine; ventrally sternite 1+2 with narrow yellow stripe with golden shine distally; sternite 3 with few yellow scales medially; sternite 4 completely yellow with golden shine; sternites 5–7 each with broad yellow stripe with golden shine distally in *B. khovdensis* **sp.n.**) and in the shape of the transparent areas of the forewing (well-developed but densely covered with colourless and yellowish scales in the species compared, *vs*. transparent areas undeveloped, completely covered with yellow scales with golden hue in the new species; cp. Figs 1–2 in this publication with pl. XVIIIb, figs 1–2 in Gorbunov, 1994 or with figs 5i–k in Gorbunov, Efetov, 2018). These two species have nearly no differences in the structure of the male genitalia (cp. Figs 5–9 in this publication with figs 1–4 in Gorbunov, 1994).

Figs 5–9. Genitalia of *Bembecia khovdensis* O. Gorbunov, **sp.n.**, holotype ♂. Genital preparation No OG–008-2023: 5 — tegumen-uncus complex; 6 — valva; 7 — saccus; 8 — phallus; 9 — vesica. Scale bar 0.5 mm for 5–8 and 0.2 for 9.

Рис. 5–9. Гениталии *Bembecia khovdensis* O. Gorbunov, **sp.n.**, голотип ♂. Препарат гениталий № OG–008-2023: 5 — тегумен-ункусный комплекс; 6 — вальва; 7 — саккус; 8 — фаллюс; 9 — везика. Масштаб 0,5 мм для 5–8 и 0,2 для 9.

From *B. tancrei* (Püngeler, 1905) (type locality: "… aus dem Altyn-Tagh." [Püngeler, 1905: 270] [= China: Xinjiang Uygur Autonomous Region, Altyn Tagh Mts.]), *B. khovdensis* **sp.n.** differs in markedly smaller size (wing span about 25 mm in *B. tancrei*, *vs*. 14.9 mm in the new species) and colouration of the abdomen dorsally (black with bluish shine, tergites 2, 4 and 6 each with yellow, narrow, posterior margin in *B. tancrei*, *vs*. dark brown to black with bright blue shine; dorsally tergite 2 with narrow yellow stripe with golden shine distally; tergites 4 and 5 each with broad yellow stripe with golden shine distally; tergites 6 and 7 each nearly completely yellow with golden shine in *B. khovdensis* **sp.n.**; cp. Fig. 1 in this article with pl. 25, fig. 194 in Špatenka *et al*., 1999).

From all other Mongolian congeners, *B. khovdensis* **sp.n.** is easily separable by the smaller size (not less than 18 mm in all species compared, *vs*. 14.9 mm in *B. khovdensis* **sp.n.**) colouration of various parts of the body and wings (compare Fig. 1 in this article with figs 196, 198, 218 and 287 in Špatenka *et al*., 1999).

BIONOMICS. The host plant and larval bionomics are unknown. The holotype was collected using non-specific artificial sex attractants in late June. It was active slightly before noon at about 11 a.m. local time.

HABITAT. Rocky semi-desert or even desert with very little grass cover (Fig. 15).

DISTRIBUTION. This species is known only from the type locality in the vicinity of Uyench Somon in the southern part of Khovd Aimag, Mongolia, at an altitude of about 1800 m above sea level.

ETYMOLOGY. This new species is named after the Khovd Aimag of Mongolia, where it inhabits.

Bembecia (s. str.) *yakovlevi* O. Gorbunov, **sp.n.**
Figs 3–4, 10–14, 16

MATERIAL. **Holotype** ♂ (Figs 3–4) with labels: "Mongolia, Gobi-Altai Aimag, / Hara Adzragyn-Nuruu Mts., / 1800 m, 45°52´N, 095°30´E, / 15–16.VII.2010, / R. Yakovlev & E. Guskova leg."; "SESIIDAE / Pictures Nos / 0027-0028–2023 / Photo by O. Gorbunov"; "Genitalia examined / by O. Gorbunov / Preparation No OG–009-2023"; "HOLOTYPUS ♂ / *Bembecia yakovlevi* / O. Gorbunov, 2023 / O. Gorbunov des., 2022".

DESCRIPTION. **Male** (holotype) (Figs 3–4). Alar expanse 21.4 mm; body length 12.5 mm; forewing length 10.0 mm; antenna length 6.3 mm.

Head: antenna completely black with dark greenish shine; frons black with dark blue shine and small yellow spot medially; labial palpus with long hair-like scales ventrally, yellow interior-dorsally and black exterior-ventrally; vertex black with dark violet shine, densely covered with white, long, hair-like scales; occipital fringe black; neck plate black with dark greenish shine and few yellow scales laterally.

Thorax: patagia black with bright violet shine; tegula black with dark blue-violet shine and few yellow scales at base of forewing; both meso- and metathorax black with dark blue-violet shine; besides this, tegula, meso- and metathorax densely covered with white, long, hair-like scales; thorax laterally dark gray-brown with bright greenish-violet shine and few yellow scales medially; both metepimeron and metameron posteriorly black with dark violet shine densely covered with white, long, hair-like scales.

Legs: fore coxa black with greenish-violet shine; fore femur black with bronze-violet shine, few yellowish scales at anterior margin and black, long, hairy-like scales at posterior margin; fore tibia pale yellow ventrally and black with admixture of dark yellow scales at margins; fore tarsus completely yellow with golden shine; mid coxa black with greenish-violet shine; mid femur black with greenish-violet shine and white, long, hairy-like scales at posterior margin; mid tibia black with greenish-violet shine, dark yellow, elongated, oblique spot exterior medially and few dark yellow scales exterior-distally; spurs yellow with golden shine; mid tarsus yellow with golden shine and admixture of black scales with greenish-violet shine exterior-dorsally on basal tarsomere; hind coxa black with greenish-violet shine; hind femur black with greenish-violet shine and white, long, hairy-like scales at posterior margin; hind tibia yellow with golden shine and black scales with greenish-violet shine both basally and distally; spurs yellow with golden shine; hind tarsus completely yellow with golden shine.

Forewing dorsally with basal part black with anthracitic shine; costal margin up to tip of vein R_3 black with dark greenish shine and yellow narrow stripe between veins Sc and R-stem; CuA-stem dark brown with dark greenish shine and admixture of few yellow scales; anal margin yellow with few dark brown scales; discal spot trapeziform, black with dark greenish-violet shine and yellow distal half; veins R_4, R_5 and M_3 dark brown with admixture of yellow scales basally; veins M_1 and M_2 yellow with dark brown scales distally; surfaces between veins R_3–R_5 yellow; apical area dark brown with bronze-violet shine, narrow, about as narrow as cilia; ventrally forewing yellow with black scales on basal part of discal spot and dark brown with bronze shine apical area; transparent areas well-developed, densely covered with translucent scales with light golden hue; posterior transparent area short but reaching level of discal spot of hindwing; external transparent area large, rounded, divided into four cells between veins R_5 and CuA_1, level to vein M_2 about three times as broad as discal spot and about 4.3 times as broad as apical area; cilia dark brown with bronze shine.

Hindwing transparent; costal margin, discal spot and vein M_1, CuP and CuA-stem yellow; veins M_3, CuA_1, CuA_2 and 1A dark brown with bronze shine; outer margin dark brown with bronze shine, annally very narrow and yellow; discal spot cuneiform, reaching base of common stem M_3–CuA_1; outer margin narrow, about 0.5 times as broad as cilia; cilia dark brown with bronze shine.

Abdomen black with dark violet shine; tergite 2 with a row of yellow scales distally; tergites 4, 6 and 7 each with broad yellow stripe distally; ventrally sternite 4 yellow; sternites 5–7 each with broad yellow stripe distally; anal tuft well-developed, dorsally black with dark violet shine, admixture of yellow scales medially and yellow ventrally.

Male genitalia (paratype; genital preparation No OG–009-2023) (Figs 10–14). Tegumen-uncus complex relatively broad; scopula androconialis well-developed, about 0.5 times as long as tegumen-uncus complex (Fig. 10); crista gnathi medialis long and broad; crista gnathi lateralis subcordiform, about half as long as and about as broad as crista gnathi medialis (Fig. 10); valva (Fig. 11) trapeziform-ovoid, crista sacculi oblique, dual, covered with apically pointed setae anteriorly and flat-topped ones posteriorly; caudal part of row of setae bent towards ventral margin; saccus (Fig. 12) relatively broad, long, about twice as long as vinculum; phallus (Fig. 13) rather broad, straight, slightly shorter than valva; vesica with numerous small cornuti (Fig. 14).

Female. Unknown.

INDIVIDUAL VARIABILITY. Unknown.

DIFFERENTIAL DIAGNOSIS. By the shape of the crista sacculi of the male genitalia, this new species seems to be close to *B. sareptana* (Bartel, 1912) (type locality: Russia, Volgograd, Sarepta), *B. auricaudata* (Bartel, 1912) (Kazakhstan: Ili River district) and *B. aktashica* O. Gorbunov, 2018 (type locality: Russia: Altai Mts, Aktash).

From *B. sareptana*, *B. yakovlevi* **sp.n.** differs in the colouration of the thorax laterally (dark brown to black with greenish-violet sheen in *B. sareptana*, *vs*. dark gray-brown with bright greenish-violet shine and few yellow scales medially in the new species), forewing dorsally (basal part black with blue-violet sheen; costal margin up to tip of vein R_3 dark brown to black with greenish-bronze sheen; CuA-stem dark brown with greenish-bronze sheen and few orange scales; anal margin orange with a few black scales with greenish-violet sheen; discal spot dark brown to black with dark violet sheen and orange distal third; veins R_4, R_5 and M_1–M_3 orange with admixture of black scales with violet sheen distally; apical area orange with narrow brown to dark brown with violet sheen outer margin in the species compared, *vs*. basal part black with anthracitic shine; costal margin up to tip of vein R_3 black with dark greenish shine and yellow narrow stripe between veins Sc and R-stem; CuA-stem dark brown with dark greenish shine and admixture of few yellow scales; anal margin yellow with few dark brown scales; discal spot black with dark greenish-violet shine and yellow distal half; veins R_4, R_5 and M_3 dark brown with admixture of yellow scales basally; veins M_1 and M_2 yellow with dark brown scales distally; surfaces between veins R_3–R_5 yellow; apical area dark brown with bronze-violet shine in *B. yakovlevi* **sp.n.**; cp. Figs 3–4 in this article with figs 31–36 in Gorbunov, 2018 or figs 1–6 in Gorbunov, 2020) and abdomen (dorsally black with dark violet sheen; tergites 2, 4, 6 and 7 each with narrow yellow stripe distally; ventrally black with greenish sheen; sternite 1+2 with small yellow spot lateral-distally; sternites 4 and 7 each with broad yellow stripe distally; anal tuft dorsally black with greenish sheen and few yellow scales medially at base, ventrally pale yellow to yellow-orange in the species compared, *vs*. black with dark violet shine; tergite 2 with a row of yellow scales distally; tergites 4, 6 and 7 each with broad yellow stripe distally; ventrally sternite 4 yellow; sternites 5–7 each with broad yellow stripe distally; anal tuft dorsally black with dark violet shine, admixture of yellow scales medially and yellow ventrally in *B. yakovlevi* **sp.n.**; cp. Figs 3–4 in this article with figs 31–36 in Gorbunov, 2018 or figs 1–6 in Gorbunov, 2020). In addition, these two species have some differences in the male genitalia, compare Figs 10–14 in this article with figs 48–52 in Gorbunov, 2018 or figs 11–15 in Gorbunov, 2020).

Figs 10–14. Genitalia of *Bembecia yakovlevi* O. Gorbunov, **sp.n.**, holotype ♂. Genital preparation No OG–009-2023: 10 — tegumen-uncus complex; 11 — valva; 12 — saccus; 13 — phallus; 14 — vesica. Scale bar 0.5 mm for 10–13 and 0.2 for 14.

Рис. 10–14. Гениталии *Bembecia yakovlevi* O. Gorbunov, **sp.n.**, голотип ♂. Препарат гениталий № OG–009-2023: 10 — тегумен-ункусный комплекс; 11 — вальва; 12 — саккус; 13 — фаллюс; 14 — везика. Масштаб 0,5 мм для 10–13 и 0,2 для 14.

From *B. auricaudata*, *B. yakovlevi* **sp.n.** can be distinguished in the colouration of the frons (completely pale yellow in *B. auricaudata*, *vs*. black with dark blue shine and small yellow spot medially in the new species), patagia (black with greenish shine and large pale yellow spot laterally in *B. auricaudata*, *vs*. completely black with bright violet shine in *B. yakovlevi* **sp.n.**), hind tibia (yellow and narrowly black with bluish shine basally in the species compared, *vs*. yellow with golden shine and black scales with greenish-violet shine both basally and distally *B. yakovlevi* **sp.n.**), forewing dorsally (basally black with greenish-blue shine; costal margin dark brown with greenish shine and narrow orange stripe between veins Sc and R-stem; Cu-stem dark brown with greenish shine and orange basally; anal margin orange; discal spot black with dark blue shine basally and orange distally; veins within external transparent area and apical area orange in *B. auricaudata*, *vs*. basal part black with anthracitic shine; costal margin up to tip of vein R_3 black with dark greenish shine and yellow narrow stripe between veins Sc and R-stem; CuA-stem dark brown with dark greenish shine and admixture of few yellow scales; anal margin yellow with few dark brown scales; discal spot black with dark greenish-violet shine and yellow distal half; veins R_4, R_5 and M_3 dark brown with admixture of yellow scales basally; veins M_1 and M_2 yellow with dark brown scales distally; surfaces between veins R_3–R_5 yellow; apical area dark brown with bronze-violet shine in *B. yakovlevi* **sp.n.**) and abdomen (dark brown to black with greenish shine; tergites 2 and 6 each with narrow pale yellow to white stripe distally; tergites 4 and 7 each with broad pale yellow stripe distally; tergites 3 and 5 each with admixture of pale yellow scales distally; ventrally sternites 1+2 and 4 each yellow; sternites 5–7 each mixed with yellow pale orange and dark brown scales in the species compared, *vs*. black with dark violet shine; tergite 2 with a row of yellow scales distally; tergites 4, 6 and 7 each with broad yellow stripe distally; ventrally sternite 4 yellow; sternites 5–7 each with broad yellow stripe distally in the new species).

From *B. aktashica*, *B. yakovlevi* **sp.n.** is clearly separable in the colouration of the frons (black with greenish-violet sheen in *B. aktashica*, *vs*. black with dark blue shine and small yellow spot medially in tha new species), forewing dorsally (basal part black with strong greenish-blue sheen; costal margin up to tip of vein R_4 dark brown to black with dark greenish-blue sheen; anal margin orange with few dark brown scales with dark violet sheen; CuA-stem dark brown to black with dark greenish-violet sheen cranially and orange anally; discal spot dark brown to black with strong violet sheen and large orange spot distally; veins R_5 and M_3 dark brown to black distally and orange proximally, veins M_1 and M_2 orange with dark brown to black tips; apical area orange with narrow dark brown outer margin with bronze sheen in the species compared, *vs*. basal part black with anthracitic shine; costal margin up to tip of vein R_3 black with dark greenish shine and yellow narrow stripe between veins Sc and R-stem; CuA-stem dark brown with dark greenish shine and admixture of few yellow scales; anal margin yellow with few dark brown scales; discal spot black with dark greenish-violet shine and yellow distal half; veins R_4, R_5 and M_3 dark brown with admixture of yellow scales basally; veins M_1 and

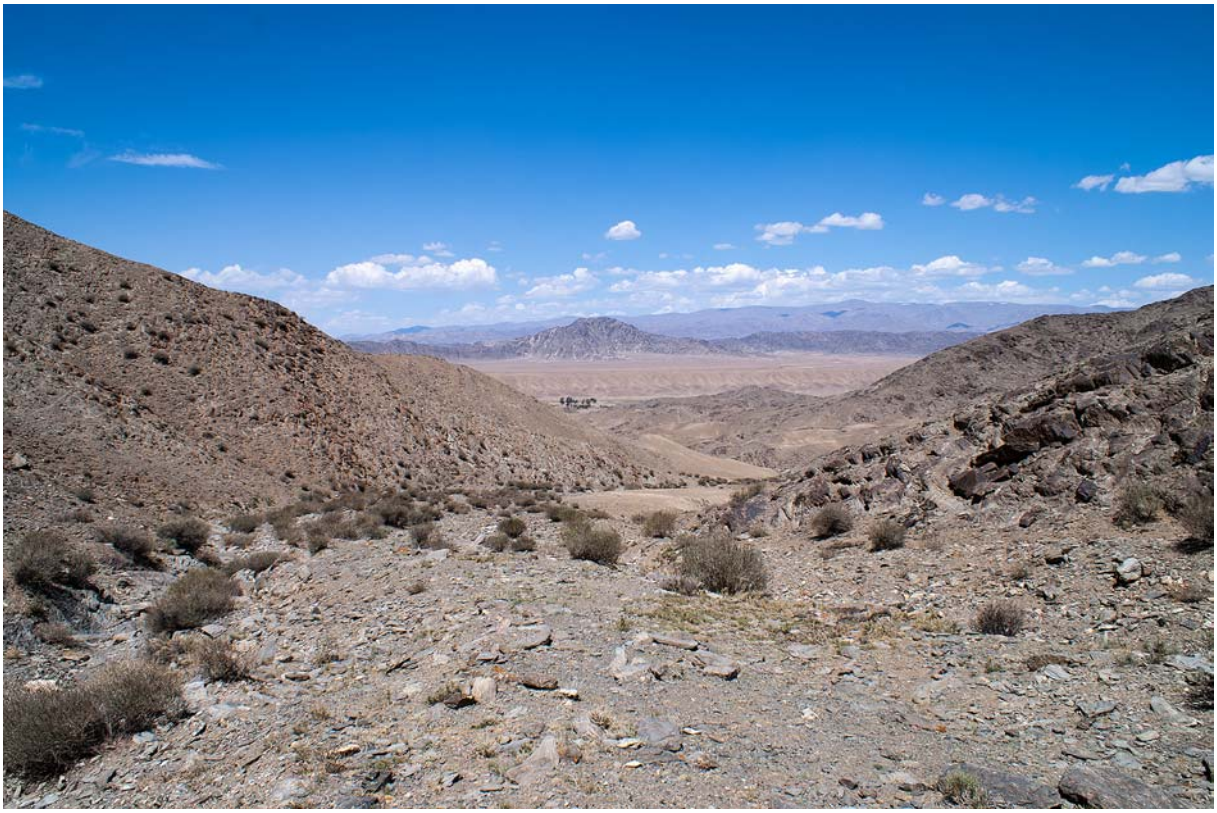

Fig. 15. The type locality of *Bembecia khovdensis* O. Gorbunov, **sp.n.**: Mongolia, Khovd Aimag, 8 km N Uyench, 1800 m, 46°07′N, 092°03′E, 22.VI.2007. Photo by O. Gorbunov.

Рис. 15. Типовое местонахождение *Bembecia khovdensis* O. Gorbunov, **sp.n.**: Монголия, Кобдоский аймак, 8 км С Уенча, 1800 м, 46°07′ с.ш., 092°03′ в.д., 22.VI.2007. Фото О. Горбунов.

M_2 yellow with dark brown scales distally; surfaces between veins R_3–R_5 yellow; apical area dark brown with bronze-violet shine in *B. yakovlevi* **sp.n.**; cp. Figs 3–4 in this article with figs 21–28 in Gorbunov, 2018) and abdomen (dorsally black with dark greenish sheen; tergites 2 and 4 each with few yellow scales distally; tergites 6 and 7 each with a narrow yellow to yellow-orange stripe distally; ventrally dark brown to black with blue-greenish sheen; sternites 4 and 7 each with narrow yellow stripe distally; anal tuft dorsally black with dark greenish-blue sheen, ventrally yellow-orange *B. aktashica*, *vs*. black with dark violet shine; tergite 2 with a row of yellow scales distally; tergites 4, 6 and 7 each with broad yellow stripe distally; ventrally sternite 4 yellow; sternites 5–7 each with broad yellow stripe distally; anal tuft dorsally black with dark violet shine, admixture of yellow scales medially and yellow ventrally in *B. yakovlevi* **sp.n.**; cp. Figs 3–4 in this article with figs 21–28 in Gorbunov, 2018). In addition, these two species are well distinguished from each other by the structure of the transparent areas of the forewing (transparent areas poorly-developed, posterior transparent area nearly undeveloped, anterior transparent area rather small, densely covered with translucent scales with light golden-greenish hue; external transparent area relatively small, covered with translucent scales with light golden-greenish hue, divided into four cells between veins R_{4+5} and CuA_1, level to vein M_2 about as broad as discal spot and about twice broader than apical area *B. aktashica*, *vs*. transparent areas well-developed, densely covered with translucent scales with light golden hue; posterior transparent area short but reaching level of discal spot of hindwing; external transparent area large, rounded, divided into four cells between veins R_5 and CuA_1, level to vein M_2 about three times as broad as discal spot and about 4.3 times as broad as apical area in *B. yakovlevi* **sp.n.**; cp. Figs 3–4 in this article with figs 21–28 in Gorbunov, 2018) and by the shape of the crista sacculi in the male genitalia; cp. Fig. 11 in this publication and fig. 43 in Gorbunov, 2018.

From all other Mongolian congeners, *B. yakovlevi* **sp.n.** clearly differs in colouration of the wings and abdomen.

BIONOMICS. The larval host plant is unknown. The holotype was collected with a butterfly net by mowing over grassy vegetation.

HABITAT. Mountain polydominant steppes (Fig. 16).

DISTRIBUTION. This species is known only from the type locality in the Hara Adzragyn-Nuruu Mts. in the eastern part of the Mongolian Altai Range at an altitude of about 1800 m above sea level.

ETYMOLOGY. This new species is named after my friend Prof. Roman V. Yakovlev, a lepidopterist, Cossidae specialist and passionate researcher of Lepidoptera in Mongolia, who collected the holotype of this species.

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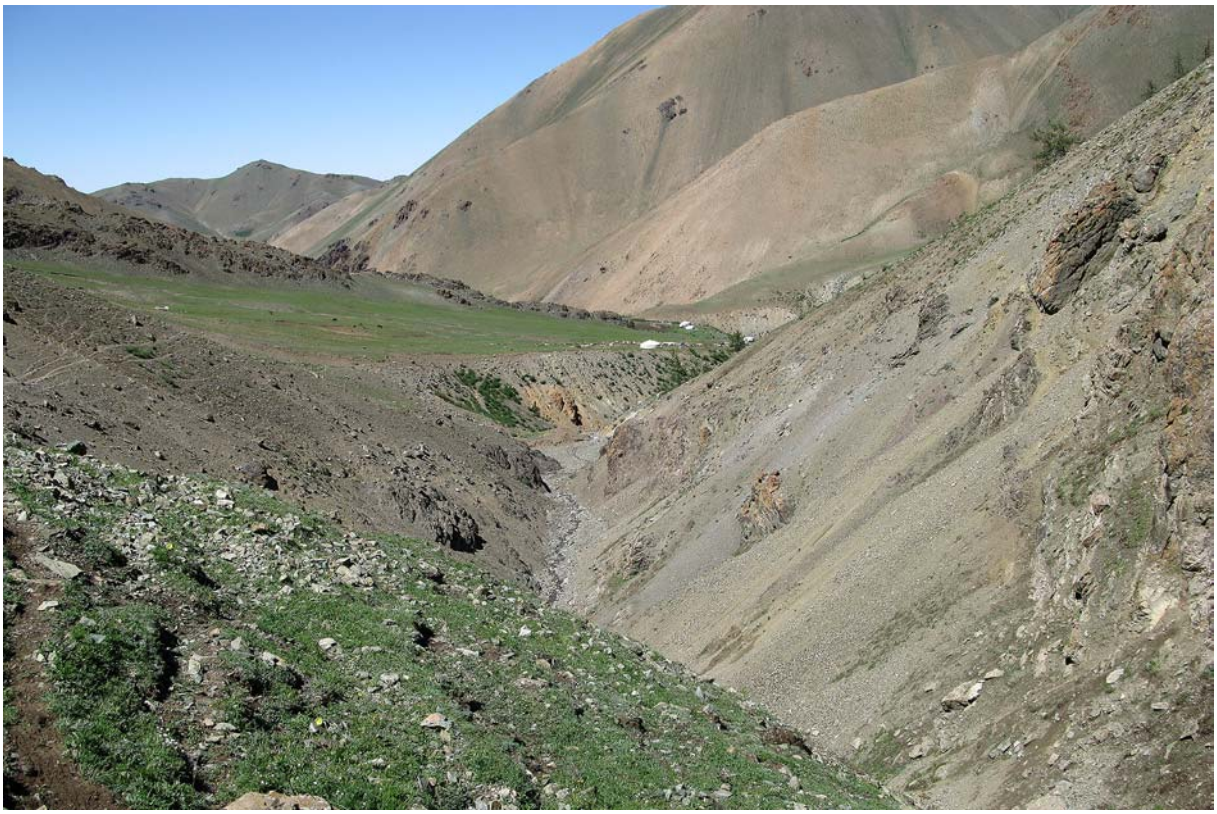

Fig. 16. The type locality of *Bembecia yakovlevi* O. Gorbunov, **sp.n.**: Mongolia, Gobi-Altai Aimag, Hara Adzragyn-Nuruu Mts., 1800 m, 45°52′N, 095°30′E, 15–16.VII.2010. Photo by R. Yakovlev.

Рис. 16. Типовое местонахождение *Bembecia yakovlevi* O. Gorbunov, **sp.n.**: Монголия, Гоби-Алтайский аймак, горы Хара-Адзрагын-Нуру, 1800 м, 45°52′ с.ш., 095°30′ в.д., 15–16.VII.2010. Фото Р. Яковлев.

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