

A new species of the genus *Chamaesphecia* Spuler, 1910 (Lepidoptera: Sesiidae) from Mongolia

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ABSTRACT. A new species *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n. (Lepidoptera, Sesiidae) is described and illustrated from Mongolia. The new species, the type series of which consists of three males and one female, was collected both by using artificial sex attractants and by carefully examining suspected host plants. This new species undoubtedly belongs to the *Chamaesphecia leucopsiformis* (Esper, 1800) species group and is readily distinguishable from the two East Palaearctic species of the group by both external characters and the female genitalic structure. The genus *Chamaesphecia* Spuler, 1910 is recorded for the fauna of Mongolia for the first time.

How to cite this article: Gorbunov O.G. 2026. A new species of the genus *Chamaesphecia* Spuler, 1910 (Lepidoptera: Sesiidae) from Mongolia // Invert. Zool. Vol.23. No.3. P.505–513. doi: 10.15298/invertzool.23.3.08

KEY WORDS. Lepidoptera, Sesiidae, Synanthedoninae, Synanthedonini, clearwing moths, new species, synthetic sex attractants, Palaearctic Region.

Новый вид рода *Chamaesphecia* Spuler, 1910 (Lepidoptera: Sesiidae) из Монголии

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РЕЗЮМЕ. Описан и проиллюстрирован новый вид *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n. (Lepidoptera: Sesiidae) из Монголии. Новый вид, типовая серия которого состоит из трёх самцов и одной самки, был собран как с помощью искусственных половых аттрактантов, так и внимательным осмотром предполагаемых кормовых растений. Этот новый вид, безусловно, принадлежит к *Chamaesphecia leucopsiformis* (Esper, 1800) видовой группе и достаточно хорошо отличается от двух восточнопалеарктических видов группы как внешними признаками, так и строением гениталий самки. Род *Chamaesphecia* Spuler, 1910 впервые приводится для фауны Монголии. Как цитировать эту статью: Gorbunov O.G. 2026. A new species of the genus *Chamaesphecia* Spuler, 1910 (Lepidoptera: Sesiidae) from Mongolia // Invert. Zool. Vol.23. No.3. P.505–513. doi: 10.15298/invertzool.23.3.08

КЛЮЧЕВЫЕ СЛОВА. Lepidoptera, Sesiidae, Synanthedoninae, Synanthedonini, бабочки-стекляницы, новый вид, искусственные половые аттрактанты, Палеарктика.

Introduction

The exclusively Palaearctic genus *Chamaesphecia* Spuler, 1810, currently comprises just under a hundred species. The genus is divided into two subgenera: *Chamaesphecia* and *Scopulosphecia* Laštůvka, 1990. The subgenus *Chamaesphecia* is a relatively compact group of species which have a trophic association with the genus *Euphorbia* (Euphorbiaceae). All species within this subgenus can be clearly divided into distinct species groups based on their external colouration, particularly that of the abdomen. Currently, at least 35 Palaearctic species are included in this subgenus.

To date, only 19 species belonging to three genera are known from the territory of Mongolia (Staudinger, 1896; Alberti, 1971; Grosser, 1982; Căpușe, 1973; Špatenka, Gorbunov, 1992; Špatenka *et al.*, 1999; Špatenka, Lingenhölle, 2002; Gorbunov, 2023, 2025a, b; Gorbunov, Efetov, 2025).

In 2002, upon the recommendation of RAS Academician Yu. Yu. Dgebuadze, an entomological team was organized within the framework of the joint Russian-Mongolian complex biological expedition of the Russian Academy of Sciences and the Mongolian Academy of Sciences. The team's primary objective was to catalog the Lepidoptera of Mongolia. Over six field seasons (2002–2005 and 2007–2008), expedition routes covered all of the country's aimags except Bayan-Ulgii, resulting in the collection of extensive material. A number of articles were published based on the expedition's findings (Puntsagdulam *et al.*, 2005; Tuzov *et al.*, 2005; Sidorov *et al.*, 2010; Zagorinsky *et al.*, 2010; Efetov *et al.*, 2012; Gorbunov, 2023, 2024, 2025b–f, 2026).

This article continues the publication of expedition results and describes a new species, *Chamaesphecia* (s. str.) *dariganga* O. Gorbunov, sp.n., based on specimens collected during the team's fieldwork.

As I have noted on numerous occasions, sex pheromones and sex attractants play an increasingly important role in studies of some groups of Lepidoptera, as they allow researchers to discover new species, identify populations of pests or rare species in collections, and monitor and regulate the seasonal flight of some moths (Efetov *et al.*, 2024, 2025, 2026a, b; Efetov, Gorbunov, 2021, 2024; Gorbunov, 2015, 2016,

2017, 2018a–c, 2019, 2022a–d, 2023, 2025a, c; Gorbunov, Efetov, 2018, 2024a, b, 2025b, c, 2026; Gorbunov *et al.*, 2025a, b).

Material and methods

The morphological examinations were made using a Leica® EZ4 stereomicroscope with LED illumination. All images of moths were taken with a Sony® α450 DSLR camera equipped with a Minolta® 50 mm f/2.8 macro lens. Photographs of the biotope and the suspected host plant were taken with a Konica Minolta® Dynax 5D camera equipped with a Minolta® 50 mm f/2.8 macro lens. The figures of the genitalia are taken with a Keyence® VHX-1000 Digital Microscope. The processing of all illustrations was finalized using Adobe Photoshop® CC2020 software.

All labels of the holotype are cited verbatim. The labels of geographical data, imaging data and genitalia preparation numbers are printed on white paper, but the type label is printed on red paper. Each label is separated by a semicolon “;” lines in a label are separated by a slash “/”. All pictures of the specimens are labeled with a number, consisting of letters and digits: name of the family, two consecutive digits separated by n-dash and a year following m-dash (e.g. SESIIDAE pictures Nos 0043–0044-2018). These letter and digit codes correspond to the numbering system of the figured specimens in the author's archive. The genitalia preparation is stored in a microtube with glycerol and 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-006-2026) is pinned under the specimen and is listed in the archives of the author.

Specimens of the type series housed in the collection of the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia (COGM).

Taxonomic account

Order Lepidoptera Linnaeus, 1758

Family Sesiidae Boisduval, 1828

Subfamily Synanthedoninae Niculescu, 1964

Tribe Synanthedonini Niculescu, 1964

Genus *Chamaesphecia* Spuler, 1910

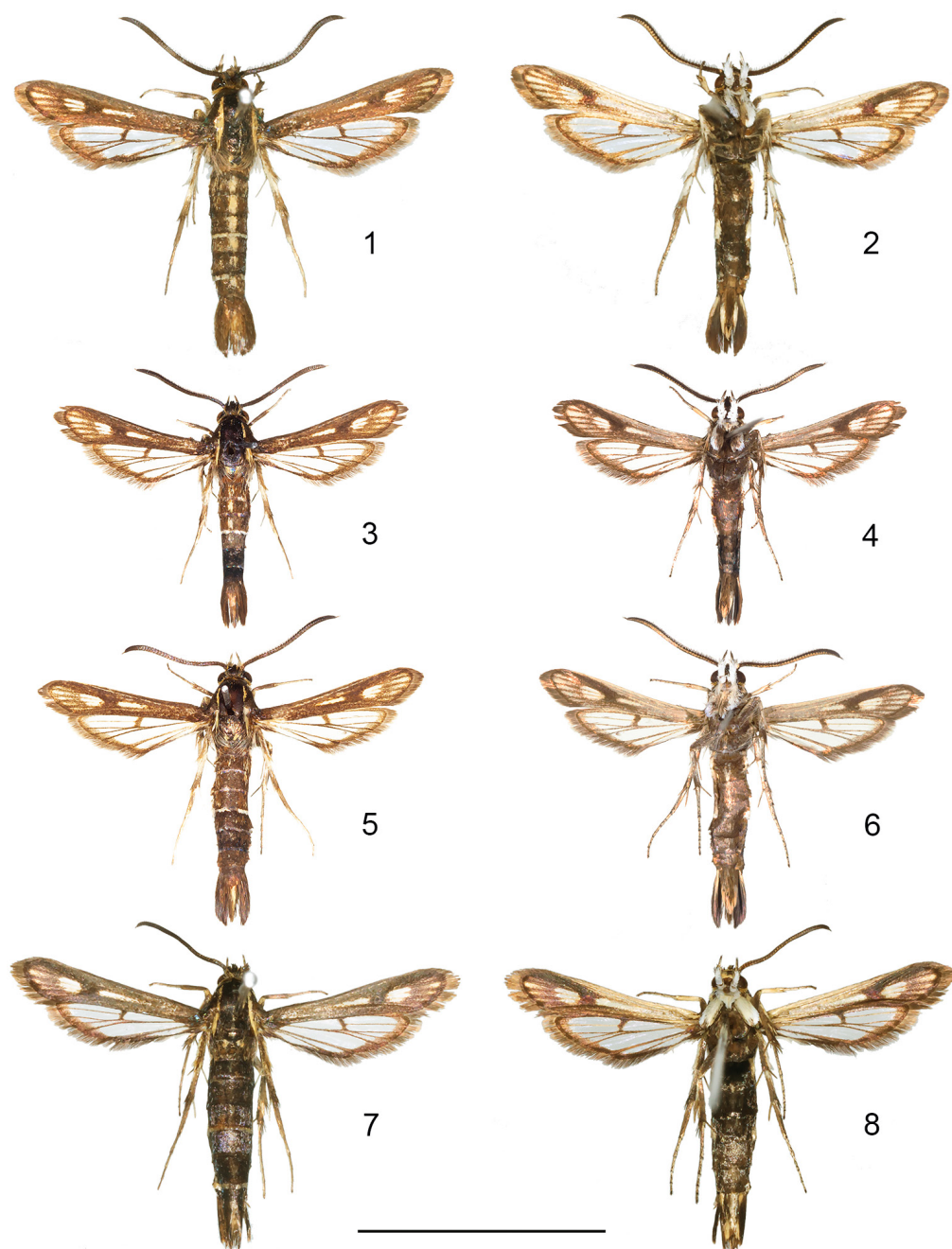
Subgenus *Chamaesphecia* Spuler, 1910

Chamaesphecia* (s.str.) *dariganga

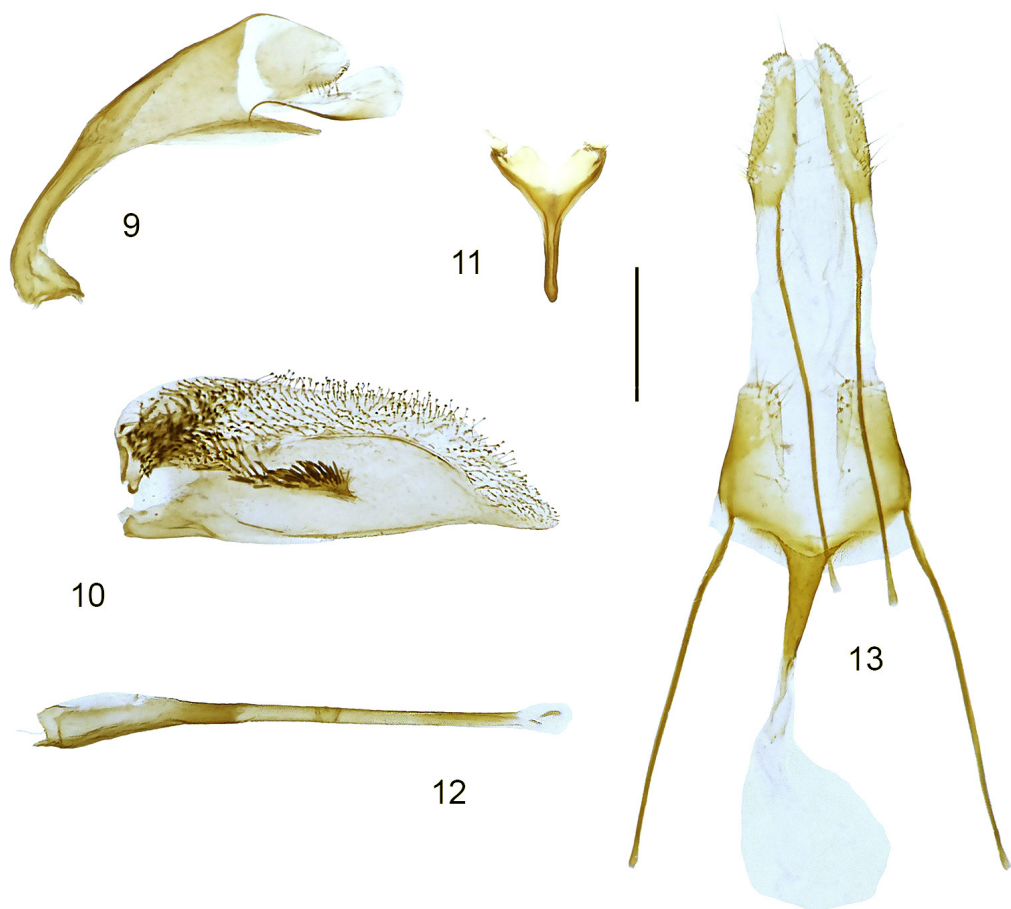
O. Gorbunov, sp.n.

Figs 1–15.

MATERIAL. **Holotype** ♂ (Figs 1–2) with labels: “Mongolia, Sükhbaatar Aimag, / 3 km WSW



Figs 1–8. Moths of *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n.: 1–2 — holotype ♂, Sesiidae pictures Nos 0043–0044-2018; 3–4 — paratype ♂, Sesiidae pictures Nos 0143–0144-2025; 5–6 — paratype ♂, Sesiidae pictures Nos 0145–0146-2025; 7–8 — paratype ♂, Sesiidae pictures Nos 0045–0046-2018. 1, 3, 5, 7 — dorsal view; 2, 4, 6, 8 — ventral view. Scale bar: 10 mm.



Figs 9–13. Genitalia of *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n.: 9–12 — paratype ♂, genitalia preparation No. OG-007-2026: 9 — tegumen-uncus complex; 10 — valva; 11 — saccus; 12 — aedeagus; 13 — paratype ♀, genitalia preparation No. OG-006-2026. Scale bar: 0.5 mm.

Dariganga, / 45°17.671'N, 113°49.165'E, / 1230 m, 2.VII.2008, / O.G. Gorbunov leg.”; “SESIIDAE / Pictures №№/0043–0044-2018 / Photo by O.G. Gorbunov”; “HOLOTYPUS ♂ / *Chamaesphecia* (s. str.) / *dariganga* / O. Gorbunov, 2026 / O.G. Gorbunov des., 2026”.

Paratypes 2 ♂♂ (Figs 3–6), same locality and date as the holotype, O.G. Gorbunov leg. Sesiidae pictures 0143–0146-2025; 1 ♂ with genitalia preparation No. OG-007-2026, 1 ♀ (Figs 7–8), same locality and date as the holotype, O.G. Gorbunov leg. Sesiidae pictures Nos 0045–0046-2018; genitalia preparation No. OG-006-2026.

DESCRIPTION. Male (holotype) (Figs 1–2). Wingspan 17.9 mm; body length 11.5 mm; forewing length 7.9 mm; length of antenna 4.8 mm.

Head: flagellum dark brown to black with dark violet sheen and with admixture of ocher-yellow

scales ventrally; scapus dark grey-brown with bronze sheen and several yellowish scales anteriorly; frons dark grey-brown with bright greenish-violet sheen; vertex black with bright greenish sheen; labial palpus white with admixture of grey-brown scales externally on apical half; occipital fringe yellowish; neck plate white with several grey-brown scales with bronze sheen medially.

Thorax: patagium grey-brown with bright bronze-violet sheen, several ocher-yellowish scales anteriorly and small ocher-yellowish spot laterally; tegula grey-brown with bright bronze-violet sheen and narrow yellowish interior margin; mesothorax grey-brown with bronze-violet sheen and narrow ocher-yellow narrow line medially; metathorax grey-brown with greenish sheen, small ocher-yellowish spot and tuft of ocher-yellowish hair-like scales laterally; beside this, tegula and mesothorax rarely

covered with ocher-yellowish hair-like scales; thorax laterally grey-brown with bronze-violet sheen and large ocher-yellowish spot medially; posteriorly, both metepimeron and metameron grey-brown with bronze sheen, rarely covered with ocher-yellowish, long, hair-like scales.

Legs: fore coxa white with bronze-violet tint and several grey-brown scales medially; fore femur grey-brown with bronze-violet sheen, few ocher-yellowish scales distally and long, ocher-yellowish hair-like scales at posterior margin; fore tibia and fore tarsus grey-brown with bronze-violet sheen dorsally and ocher-yellowish with golden tint ventrally; mid coxa grey-brown with bronze-violet sheen; mid femur grey-brown with bronze-violet sheen, dense admixture of ocher scales exterior distally and ocher, long, hair-like scales externally; mid tibia white with golden tint and narrowly grey-brown with bronze sheen distally; spurs ocher with bronze tint; mid tarsus grey-brown with bronze-violet sheen dorsally and ocher-yellowish with golden tint ventrally; hind coxa grey-brown with bronze-violet sheen; hind femur grey-brown with bronze-violet sheen, admixture of ocher and several white with golden tint scales exterior distally and ocher, long, hair-like scales at posterior margin; hind tibia white with golden tint, narrow grey-brown with bronze sheen line both dorsally and ventrally from base of tibia to base of mid spurs and with narrow grey-brown with bronze sheen ring distally; spurs ocher with bronze tint; hind basal tarsomere grey-brown with bronze tint and several ocher scales with golden tint interior ventrally, remaining tarsomeres grey-brown with bronze sheen dorsally and ocher-yellowish with golden tint ventrally.

Forewing dorsally with basal part black with dark blue-violet sheen; costal and anal margins, CuA-stem light brown with bronze sheen; discal spot dark brown to brown with bronze sheen; veins M_1 and M_2 within external transparent area yellowish in basal half and light brown with bronze sheen in distal half; apical area light brown with bronze sheen, surface between veins R_4 – M_3 with ocher-yellowish triangular streaks in distal half; anterior transparent area very narrow and short, reaching level of discal spot of hindwing only, densely covered with translucent and several white scales with golden-greenish tint; posterior transparent area undeveloped; external transparent area extremely small, rounded distally, divided into three cells between common stem of veins R_4 – R_5 and M_3 , level to vein M_1 about as broad as discal spot and about 0.5 times as broad as apical area; cilia brown with bronze sheen; ventrally costal margin up to tip of vein R_1 , basal two third of CuA-stem and anal margin ocher with golden tint; distal third of CuA-stem and anal margin dark brown to brown with bronze sheen; discal spot and surface between veins R_1 and R_4 dark brown with bronze sheen; apical area ocher-yellowish with brown veins; cilia brown with bronze sheen.

Hindwing transparent; dorsally, veins, discal spot and outer margin brown with bronze sheen; discal spot relatively broad with nearly parallel margins, reaching base of common stem of veins M_3 –CuA $_1$; outer margin broad, about as broad as cilia; ventrally veins M_2 and 2A ocher-yellowish with golden tint, remaining veins and discal spot brown with bronze sheen; outer margin brown with bronze sheen and dense admixture of ocher-yellowish scales; cilia brown with bronze sheen, ocher anally.

Abdomen dorsally dark brown but densely covered with brown scales with bronze sheen, masking background colouration; tergites 2 and 3 each with admixture of several ocher-yellowish scales with golden tint; distal row on scales of tergites 4 and 6 each ocher-yellowish; all tergites with elongated yellowish spot medially; laterally tergite 4 narrowly ocher-yellowish; ventrally sternites dark brown with dark bronze-violet sheen and several ocher-yellowish scales on basal sternite distally; anal tuft dark brown to brown with several yellowish scales medially and ocher-yellowish scales laterally.

Male genitalia (paratype, genitalia preparation No OG-007-2026) (Figs 9–12). Tegumen-uncus complex relatively narrow; scopula androconialis undeveloped, but uncus with several short and thin setae ventrally (Fig. 9); crista gnathi lateralis narrow oval, but crista gnathi medialis undeveloped (Fig. 9); valva (Fig. 10) trapezoidal; its dorsal third covered with bifurcate apically setae, being largest at base of valva and decreasing noticeably toward its apex; crista sacculi triangular short and low, covered with strong bifurcated apically setae; saccus (Fig. 11) relatively narrow, long, about as long as vinculum; phallus (Fig. 12) phallus slender and straight, about 1.15 times as long as valva; vesica with two strong cornuti (Fig. 12).

Female (paratype) (Figs 7–8). Wingspan 18.0 mm; body length 9.0 mm; forewing length 6.5 mm; length of antenna 3.6 mm.

Somewhat more robust and slightly larger than male. Head with frons yellow with golden tint and with admixture of several grey-brown scales with bronze-violet sheen; vertex with admixture of several yellowish scales anteriorly; hind tibia white with golden tint, narrow grey-brown with bronze sheen line both dorsally and ventrally, and with narrow grey-brown with bronze sheen ring distally. Otherwise colour pattern as in male.

Female genitalia (paratype, genitalia preparation No OG-006-2026) (Fig. 13). Papillae anales relatively narrow, but long, well-sclerotized basally and narrowly membranous distally, covered with short and long setae; tergite 8 slightly narrowed ventrodistally, with ventral margin folded inward, with short and long setae distally; both pairs of apophyses of approximately equal length; both lamellae antevaginalis and postvaginalis undeveloped; ostium bursae heavily sclerotized and funnel-shaped, situated at



Fig. 14. *Euphorbia* spp. (Euphorbiaceae) is the most likely host plant of larvae of *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n.

level of proximal margin of 8th tergite; antrum long, about 0.3 times as long as anterior apophysis, heavily sclerotized; ductus bursae membranous, about as long as antrum; corpus bursae spherical, without signum.

INDIVIDUAL VARIABILITY. Unknown for females. Males slightly vary in the number of ocher-yellowish and yellowish scales on the thorax, legs and abdomen (Figs 1–6). Their main dimensions vary within the following limits: 14.2–17.9 mm; body length 9.0–11.5 mm; forewing length 6.3–7.9 mm; length of antenna 3.9–4.8 mm

DIFFERENTIAL DIAGNOSIS. Undoubtedly, this new species belongs to the *Chamaesphecia leucopsiformis* (Esper, 1800) species group and is closely related to East Palaearctic *Ch. zuoxiana* (Yang, 1977) (type locality: China: Hebei, Zhouzhuo) and *Ch. schroederi* Toševski, 1993 (China: Inner Mongolia, Ordos, Ejin Horo Banner). From the first species compared, *Ch. dariganga* sp.n. can be distinguished by the colouration of the occipital fringe (black in *Ch. zuoxiana*, vs. yellowish in the new species), thorax

laterally (brown with white scales on prothorax in *Ch. zuoxiana*, vs. grey-brown with large ocher-yellowish spot medially *Ch. dariganga* sp.n.), discal spot of the forewing (brown with several yellow scales in the species compared, vs. dark brown to brown with bronze sheen in the new species), discal spot and outer margin of the hindwing dorsally (discal spot brown, densely covered with yellowish-brown scales, outer margin yellowish-brown internally and brown externally in *Ch. zuoxiana*, vs. discal spot and outer margin brown with bronze sheen in *Ch. dariganga* sp.n.) and abdomen dorsally (each tergites with small pale yellow spot medially, forming medial line, tergite 4 with white laterally in the species compared, vs. all tergites with elongated yellowish spot medially, forming medial line, the distal row of scales of tergites 4 and 6 each ocher-yellowish, distal row of scales of tergites 4 and 6 each ocher-yellowish in the new species).

Ch. dariganga sp.n. differs from *Ch. schroederi* in the conformation of the anterior transparent area of the forewing (noticeably longer and extending closer



Fig. 15. Habitat of *Chamaesphecia* (s.str.) *dariganga* O. Gorbunov, sp.n. Mongolia, Sükhbaatar Aimag, 3 km WSW Dariganga, 2.VII.2008. View of Dari Ovoo (Altan Ovoo) from the type locality.

to wing base in the species compared, vs. very narrow and short, reaching level of discal spot of hindwing only in *Ch. dariganga* sp.n.; cp. Figs 1–8 in this publication with figs 1a, b in Toševski, 1993) and hindwing (anal and outer margin widely dusted with dark brown scales, surface between veins M_3 – CuA_1 and CuA_1 – CuA_2 nearly covered with dark brown scales in *Ch. schroederi*, vs. outer margin broad, about as broad as cilia in *Ch. dariganga* sp.n.; cp. Figs 1–8 in this publication with figs 1a, b in Toševski, 1993), and in the colouration of the abdomen dorsally (distal margin of 2nd, 4th and 6th tergites narrowly banded white in the species compared, vs. distal row of scales of tergites 4 and 6 each ocher-yellowish in the new species; compare the corresponding figures in this publication with figs 1a, b in Toševski, 1993). In addition, these two species differ in the relative length of the apophyses in the female genitalia (cp. Fig. 13 in this article with fig. 3a in Toševski, 1993).

BIONOMICS. The host plant of the larvae is unknown, but it is highly likely to be the only species of spurge (*Euphorbia* sp.; Euphorbiaceae) growing at the type locality (Fig. 14). The type series was collected in early July. Males were attracted to lures with non-specific synthetic sex attractants in the first half of the day from about 9 AM to 11 AM.

HABITAT. Specimens of the type series were collected at the edge of a large sandy area, in a small

depression with very sparse herbaceous vegetation situated between scattered elm trees (*Ulmus pumila* L.; Ulmaceae). (Fig. 15).

DISTRIBUTION. This new species is known only from the type locality in southeastern Mongolia, in the vicinity of Dariganga in Sükhbaatar Aimag.

ETYMOLOGY. This new species is named after the Dariganga, a sub-ethnic group of Eastern Mongols inhabiting a volcanic plateau in southeastern Mongolia's Sükhbaatar Aimag.

Acknowledgements. I would like to express my cordial gratitude to Academician of the Russian Academy of Sciences Prof. Yuri Yu. Dgebuadze for the offer to take part in the Joint Russian-Mongolian Complex Biological Expedition to study the fauna of Lepidoptera of Mongolia. I am also grateful to the head of the expedition, the late Prof. Peter D. Gunin (1942–2019), for organizing expedition trips around Mongolia. My endless thanks to Mongolian colleagues Drs J. Puntsgdulam, D. Altanchimeg and L. Jargalsaikhan (all from Ulan Bator, Mongolia). Last but not least I thank Dr Anatoly V. Krupitsky (Moscow, Russia) for carefully checking the English of an advanced draft.

The study was supported by the Ministry of Science and Higher Education of the Russian Federation (project No. 1023032700469-5-1.6.19) and carry out

under the state assignment of Lomonosov Moscow State University.

The study was conducted using the equipment of the Joint Usage Center “Instrumental methods in ecology” of the A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences (Moscow, Russia).

References

- Alberti B. 1971. Lepidopteren aus der Mongolischen Volksrepublik // Dt. Ent. Z. N.F. Bd.18 No.IV/V. S.[361]–376.
- Çapuş I. 1973. 236. Aegeriidae. Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei (Lepidoptera) // Reichenbachia. Bd.14. Nr.15. S.109–124.
- Efetov K.A., Gorbunov O.G., Tarmann G.M. 2012. Zygaenidae of Mongolia (Lepidoptera) // Nachrichten entomol. Vereins Apollo. Bd.32. No.3/4. S.159–164.
- Efetov K.A., Can F., Akar S., Ruchko P.V., Gorbunov O.G. 2024. First records of *Chamaesphecia efetovi* O. Gorbunov, 2019 (Lepidoptera: Sesiidae) in Türkiye (Turkey) // Ecologica Montenegrina. Vol.78. P.243–251. <https://dx.doi.org/10.37828/em.2024.78.23>
- Efetov K.A., Gorbunov O.G. 2021. New data on distribution of *Chamaesphecia efetovi* O. Gorbunov, 2019, in the Crimea // SHILAP Revista lepidopterologia. Vol.49. No.195. P.471–478. <https://doi.org/10.57065/shilap.284>
- Efetov K.A., Gorbunov O.G. 2024. Confirmation of the presence of *Tipulia tipuliformis* (Clerck, 1759) (Lepidoptera, Sesiidae) in the Crimea // Ecologica Montenegrina. Vol.78. P.252–259. <https://dx.doi.org/10.37828/em.2024.78.24>
- Efetov K.A., Kucherenko E.E., Gorbunov O.G. 2026a. First record on the sex attractants for a representative of the tribe Cleleini Efetov & Tarmann, 2024 (Lepidoptera: Zygaenidae, Procrinae) // Ecologica Montenegrina. Vol.94. P.98–107. <https://dx.doi.org/10.37828/em.2026.94.4>
- Efetov K.A., Shchurov V.I., Gorbunov O.G. 2025. First records of *Chamaesphecia efetovi* O. Gorbunov, 2019, in Krasnodar Territory (Northern Caucasus, Russia) (Lepidoptera: Sesiidae) // SHILAP Revista lepidopterologia. Vol.53. No.209. P.139–146. <https://doi.org/10.57065/shilap.1031>
- Efetov K.A., Tarmann G.M., Gorbunov O.G. 2026b. Description of the male of *Chrysartona refulgens* Hampson, 1893 [“1892”] (Lepidoptera: Zygaenidae, Procrinae, Cleleini), hitherto known only from the female holotype // Ecologica Montenegrina. Vol. 94. P.243–253. <https://dx.doi.org/10.37828/em.2026.94.17>
- Gorbunov O.G. 2015. Contributions to the study of the Ethiopian Lepidoptera. I. The genus *Melittia* Hübner, 1819 [“1816”] with description of a new species // Zootaxa. Vol.4033. No.4. P.543–554. <http://dx.doi.org/10.11646/zootaxa.4033.4.5>
- Gorbunov O.G. 2016. *Nokona mahawu* sp. n., a new clearwing moth species (Lepidoptera, Sesiidae) from North Sulawesi, Indonesia // Russian Entomol. J. Vol.25. No.2. P.161–165.
- Gorbunov O.G. 2017. On the taxonomy and morphology of *Leuthneria ruficincta* (Lepidoptera, Sesiidae) // Zootaxa. Vol.4244. No.1. P.127–136. <https://doi.org/10.11646/zootaxa.4244.1.7>
- Gorbunov O.G. 2018a. New data on the clearwing moth fauna of the Altai Mountains, Russia, with the description of two new species (Lepidoptera, Sesiidae) // Zootaxa. Vol.4425. No.2. P.263–282. <https://doi.org/10.11646/zootaxa.4425.2.4>
- Gorbunov O.G. 2018b. A new species of the genus *Taikona* Arita et O. Gorbunov, 2001 from the Malay Peninsula (Lepidoptera, Sesiidae) // Russian Entomol. J. Vol.27. No.3. P.293–296. <https://doi.org/10.15298/rusentj.27.3.10>
- Gorbunov O.G. 2018c. A new genus and species of clearwing moth (Lepidoptera, Sesiidae) from Ethiopia // Zootaxa. Vol.4497. No.4. P.492–500. <https://doi.org/10.11646/zootaxa.4497.4.2>
- Gorbunov O.G. 2019. A new species of the genus *Negotinthia* O. Gorbunov, 2001 (Lepidoptera: Sesiidae) from Crimea, with remarks on the genus // Russian Entomol. J. Vol.28. No.3. P.303–311. <https://doi.org/10.15298/rusentj.28.3.09>
- Gorbunov O.G. 2022a. A new species of the genus *Tyritaca* Walker, 1862 (Lepidoptera: Sesiidae) from West Malaysia with a catalogue of the genus // Zootaxa. Vol.5104. No.1. P.125–136. <https://doi.org/10.11646/zootaxa.5104.1.7>
- Gorbunov O.G. 2022b. New data on clearwing moths (Lepidoptera: Sesiidae) of Sakhalin Island // Far Eastern Entomologist. No.449. P.21–28. <https://doi.org/10.25221/fee.449.4>
- Gorbunov O.G. 2022c. A new species of the genus *Scoliozona* Kallies et Arita, 1998 (Lepidoptera: Sesiidae) from Halmahera, Indonesia // Russian Entomol. J. Vol.31. No.2. P.182–187. <https://doi.org/10.15298/rusentj.31.2.16>
- Gorbunov O.G. 2022d. To the morphology of little-known *Pseudosesia lecerfi* (Hampson, 1919) (Lepidoptera: Sesiidae) // Russian Entomol. J. Vol.31. No.3. P.286–292. <https://doi.org/10.15298/rusentj.31.3.10>
- Gorbunov O.G. 2023. A new species of the genus *Macrotarsipodes* Le Cerf, 1916 (Lepidoptera: Sesiidae) from Ethiopia // Invert. Zool. Vol.20. No.4. P.461–466. <https://doi.org/10.15298/invertzool.20.4.11>
- Gorbunov O.G. 2023. Two new species of the genus *Bembecia* Hübner, 1819 [“1816”] (Lepidoptera: Sesiidae) from Western Mongolia // Russian Entomol. J. Vol.32. No.2. P.198–206. <https://doi.org/10.15298/rusentj.32.2.10>
- Gorbunov O.G. 2024. [To the knowledge of the fauna of Lepidoptera of Mongolia. Family tussock moths (Lepidoptera: Noctuoidea: Lymantriidae)] // Caucasian Entomol. Bull. Vol.20. No.1. P.47–59 [in Russian, with English summary]. <https://doi.org/10.5281/zenodo.10869524>
- Gorbunov O.G. 2025a. On the morphology and systematics of *Bembecia jakuta* (Herz, 1903) (Lepidoptera, Sesiidae) // Acta Biologica Sibirica. Vol.11. P.197–209. <https://dx.doi.org/10.5281/zenodo.14945738>
- Gorbunov O.G. 2025b. [To the knowledge of the fauna of Lepidoptera of Mongolia. The family prominent moths (Lepidoptera: Noctuoidea: Notodontidae)] // Caucasian Entomol. Bull. Vol.21. No.1. P.41–57 [in Russian, with English summary]. <https://doi.org/10.5281/zenodo.15078733>
- Gorbunov O.G. 2025c. A redescription of *Bembecia strandi* (Lepidoptera: Sesiidae) // Zoosystematica Rossica.

- Vol.34. No.1. P.138–148. <https://dx.doi.org/10.31610/zsr/2025.34.1.138>
- Gorbunov O.G. 2025d. On the morphology and bionomics of *Bembecia tristis* Staudinger, 1896, bona species (Lepidoptera: Sesiidae) // Invert. Zool. Vol.22. No.3. P.519–531. <https://dx.doi.org/10.15298/invertzool.22.3.11>
- Gorbunov O.G. 2025e. A new species of the genus *Bembecia* Hübner, 1819 (Lepidoptera: Sesiidae) from the Khangai, Mongolia // Russian Entomol. J. Vol.34. No.4. P.554–562. <https://dx.doi.org/10.15298/rusentj.34.4.13>
- Gorbunov O.G. 2025f. [To the knowledge of the fauna of Lepidoptera of Mongolia. The family forester and burnet moths (Lepidoptera: Zygaenidae)] // Caucasian Entomol. Bull. Vol.21. No.2. P.201–211 [in Russian, with English summary]. <https://doi.org/10.5281/zenodo.17200399>
- Gorbunov O.G. 2026. To the knowledge of the fauna of Lepidoptera of Mongolia. Families lappet moths (Lepidoptera: Lasiocampidae) and saturniids (Lepidoptera: Saturniidae) // Caucasian Entomol. Bull. Vol.22. No.1. P.213–231. <https://doi.org/10.5281/zenodo.21642943>
- Gorbunov O.G., Efetov K.A. 2018. The clearwing moth genus *Bembecia* Hübner 1819 [“1816”] (Lepidoptera, Sesiidae) in Crimea, with the description of a new species // Zoologicheskii Zhurnal. Vol.97. No.7. P.812–839. <https://doi.org/10.1134/S0044513418070085>
- Gorbunov O.G., Efetov K.A. 2024a. Sexual activity of males and distribution of *Stygioides colchicus* (Herrich-Schäffer, 1851) (Lepidoptera: Cossidae) // Invert. Zool. Vol.21. No.1. P.109–117. <https://doi.org/10.15298/invertzool.21.1.08>
- Gorbunov O.G., Efetov K.A. 2024b. To the distribution of the genus *Negotinthia* O. Gorbunov, 2001 (Lepidoptera: Sesiidae) in the Crimea // Ecologica Montenegrina. Vol.73. No.146–157. <https://dx.doi.org/10.37828/em.2024.73.15>
- Gorbunov O.G., Efetov K.A. 2025a. New data on the distribution of the genus *Pennisetia* Dehne, 1850 (Lepidoptera: Sesiidae) on Sakhalin Island, Russia // Ecologica Montenegrina. Vol.93. P.21–35. <https://dx.doi.org/10.37828/em.2025.93.2>
- Gorbunov O.G., Efetov K.A. 2025b. To the distribution of *Microsphecia brosiiformis* (Hübner, 1813) (Lepidoptera: Sesiidae) on the Crimean Peninsula (Russia) // Ecologica Montenegrina. Vol.86. P.1–14. <https://dx.doi.org/10.37828/em.2025.86.1>
- Gorbunov O.G., Efetov K.A. 2025c. To the distribution of *Bembecia* (*Bembecia*) *ichneumoniformis* ([Denis et Schiffermüller], 1775) (Lepidoptera: Sesiidae) on the Crimean Peninsula, Russia // Ecologica Montenegrina. Vol.90. P.331–343. <https://dx.doi.org/10.37828/em.2025.90.14>
- Gorbunov O.G., Efetov K.A. 2026. New data on the distribution and sexual activity of males of *Stygioides colchica* (Herrich-Schäffer, 1851) (Lepidoptera: Cossidae) on the Crimean Peninsula // Ecologica Montenegrina. Vol.101. P.61–70. <https://dx.doi.org/10.37828/em.2026.101.6>
- Gorbunov O.G., Efetov K.A., Ivanov A.V. 2025a. First record of *Bembecia* (*Opacosphecia*) *eversmanni* O. Gorbunov, 2024 (Lepidoptera: Sesiidae) from the Crimean Peninsula, Russia // Ecologica Montenegrina. Vol.91. P.47–58. <https://dx.doi.org/10.37828/em.2025.91.7>
- Gorbunov O.G., Snegovaya N., Shapoval N.A., Mammadov I.B.-O., Yakovlev R.V. 2025b. Towards the knowledge of the fauna of clearwing moths (Lepidoptera, Sesiidae) of Nakhichevan Autonomous Republic, Azerbaijan // Acta Biologica Sibirica. Vol.11. P.1379–1393. <https://dx.doi.org/10.5281/zenodo.17908580>
- Grosser N. 1982. Zur Fauna der Bombyces und Sphinges der Mongolei // Faun. Abh. Mus. Tierk. Dresden. Bd.9. Nr.13. S.[137]–140.
- Puntsagdulam J., Gorbunov O.G., Tuzov V.K., Altanchimeg D., Tugs-Erdene S. 2005. [News about some Mongolian moth (Lepidoptera: Saturniidae, Sphingidae)] // Proc. Institute of Biology. Vol.25. P.221–226 [in Mongolian, with English summary].
- Sidorov A.V., Gorbunov O.G., Puntsagdulam J. 2010. [Fauna and zoogeography of the lappet moths (Lepidoptera, Lasiocampidae) of Mongolia] // Ecological consequences of biosphere processes in the ecotone zone of Southern Siberia and Central Asia: Proceedings of the International Conference. Vol.2. Poster reports. Ulaanbaatar, September 6–8, 2010. Ulaanbaatar: Bembi san Publ. House. P.188–190 [in Russian, with English summary].
- Špatenka K., Gorbunov O. 1992. Vier neue paläarktische Glasflügler (Sesiidae, Lepidoptera) // Entomofauna. Bd.13. Nr.23. S.377–396.
- Špatenka K., Gorbunov O., Laštůvka Z., Toševski I., Arita Yu. 1999. Sesiidae, Clearwing Moths // C.M. Naumann (ed.). Handbook of Palaearctic Macrolepidoptera. Vol.1. Wallingford: Gem Publishing Company. 569 p., 57 pls.
- Špatenka K., Lingenhöle A. 2002. Ergebnisse einer sesiidologischen Expedition in die Mongolei 2000 (Lepidoptera: Sesiidae) // Ent. Z. Bd.112. Nr.7. S.200–205.
- Staudinger O. 1896. Ueber Lepidopteren von Uliassutai // Dt. Ent. Z. “Iris”. Bd.VIII. Nr.2. S.[344]–366.
- Toševski I. 1993. *Chamaesphecia schroederi* sp. nov., a new species of clearwing moth from Inner Mongolia, China (Lepidoptera, Sesiidae) // Entomofauna. Bd.14. Nr.26. S.421–428.
- Tuzov V.K., Gorbunov O.G., Puntsagdulam J. 2005. [On the knowledge of butterflies of Numrog Reservation (east Mongolia)] // Proc. Institute of Biology. Vol.25. P.245–246 [in Mongolian, with English summary].
- Zagorinskiy A.V., Gorbunov O.G., Puntsagdulam J. 2010. [A new contribution to the fauna of hawk moths (Lepidoptera, Sphingidae) of Mongolia] // Ecological consequences of biosphere processes in the ecotone zone of Southern Siberia and Central Asia: Proceedings of the International Conference. Vol.2. Poster reports. Ulaanbaatar, September 6–8, 2010. Ulaanbaatar: Bembi san Publ. House. P.178–180 [in Russian, with English summary].

Responsible editor K.G. Mikhailov