

A new species of the genus *Heterosphecia* Le Cerf, 1916 (Lepidoptera: Sesiidae) from Laos

Новый вид рода *Heterosphecia* Le Cerf, 1916 (Lepidoptera: Sesiidae) из Лаоса

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КЛЮЧЕВЫЕ СЛОВА. Sesiidae, Osminiini, бабочки-стеклянницы, *Heterosphecia*, новый вид, Ориентальный регион.

ABSTRACT. A new species, *Heterosphecia zamolodchikovi* O. Gorbunov, **sp.n.** from Laos, is described and illustrated. The type series was collected on wet soil near the drying stream within a primary, monsoon, lowland, tropical forest. Superficially, this new species seems to be closest to *H. soljanikovi* (O. Gorbunov, 1988), but it is separated in the colouration of the hind tibia and abdomen. Female and the larval host plant of the new species are unknown.

РЕЗЮМЕ. Приведено описание нового вида, *Heterosphecia zamolodchikovi* O. Gorbunov, **sp.n.** из Лаоса. Типовая серия была собрана на влажной почве у пересыхающего ручья среди первичного, муссонного, низинного, тропического леса. Новый вид наиболее близок к *H. soljanikovi* (O. Gorbunov, 1988), но отличается от него окраской задних голеней и брюшка. Самка и кормовое растение гусениц неизвестны.

Introduction

As I already noted [Gorbunov, 2021a, b], despite the intensification of research on the fauna of clearwing moths (Sesiidae) in Southeast Asia in the last couple of decades [Arita, Gorbunov, 2000a, b, 2001, 2002, 2003; Gorbunov, Arita, 2000, 2001, 2002, 2005, 2018, 2019, 2020a–c; Kallies, Arita, 2001, 2004a, b, 2005, 2006; Gorbunov, 2015a, b, 2018, 2021a–c, 2022a–e, 2024; Skowron *et al.*, 2015; Skowron Volponi, Volponi, 2017a, b, 2018; Skowron, Volponi, 2020], the degree of its knowledge should be considered extremely low. This fully applies to Laos. Only eleven sesiid species are known from the country for the time being [Arita, Gorbunov, 2000a; Gorbunov, 2015b, 2021a–c, 2022d, e; Kallies, Štolc, 2018; Kallies *et al.*, 2020].

An expedition to Laos in 2005 resulted in the collection of a great number of clearwing moths [Gorbunov, 2015b]. After a detailed study, one representative of the genus *Heterosphecia* Le Cerf, 1916 turned out to be a new species, which is described below. This is my seventh report on the results of a very successful 2005 expedition to Laos [Gorbunov, 2015b, 2021a–c, 2022d, e].

Material and methods

The description is made using a Leica EZ4 stereomicroscope with LED illuminations, and images is taken with a Sony® α450 DSLR camera equipped with a Minolta® 50 f/2.8 Macro lens. The head figures are taken with a Keyence® VHX-1000 Digital Microscope, but these of the genitalia are taken with a Keyence® BZ-9000 Bioreveo Fluorescence Microscope. The processing of all illustrations is finalized with the Adobe® Photoshop® CC 2020 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 No. 0179-0180–2021). 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-003-2021) is pinned under the specimen and is listed in the archives of the author.

The material studied or mentioned herein is kept in the collection of the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia (COGM).

The names of plants were verified with the WFO [2024].

Taxonomic account

Heterosphecia zamolodchikovi O. Gorbunov, **sp.n.**

Figs 1–2, 9–11.

MATERIAL. **Holotype** ♂ (Figs 1–2) with labels: “Laos, Khammouang Prov., / Ban Khounkham (Nahin), / 18° 13'N, 104° 31'E, 200 m, / 23.IV.2005, / O. Gorbunov leg.”; “SE-SIIDAE / Pictures Nos / 0179-0180-2021 / Photo by O. Gorbunov”; “HOLOTYPUS ♂ / *Heterosphecia zamolodchikovi* / O. Gorbunov, 2024 / O. Gorbunov des., 2024”.

Paratypes (3 ♂♂): 1♂, with same locality, 1–2.V.2002, V. Tuzov leg. with genitalia preparations Nos OG-017-2024; 1♂, with same locality, 16.IV.2005, O. Gorbunov leg.; 1♂, with same locality, 27.IV.2005, O. Gorbunov leg. (Sesiidae pictures Nos 0177-0178–2021).

DESCRIPTION. **Male** (holotype) (Figs 1–2). Alar expanse 22.3 mm; body length 12.0 mm; forewing length 9.9 mm; antenna length 5.5 mm.

Head: antenna black with dark blue sheen dorsally, yellow ventrally; scapus dark brown to black with dark violet sheen and few yellow scales ventrally; frons dark brown with bronze-violet sheen and narrow white stripe laterally; basal palpomere dark brown to black with dark blue sheen, middle palpomere white with admixture of yellow scales and broad black stripe with dark violet sheen exteriorventrally, apical palpomere white mixed with yellow and black scales; vertex covered with black and white hair-like scales and with small white spot ahead of ocellus; pericephalic hairs white with few yellow scales dorsally; neck plate dark brown to black with bronze-violet sheen.

Thorax: patagia dark brown to black with dark bronze sheen and small white spot laterally; tegula dark brown to black with dark violet sheen, few elongate white scales at base of forewing, few yellow-orange scales distally and extremely narrow white interior margin; mesothorax dark brown to black with dark greenish-violet sheen and extremely narrow white line medially; besides this, tegula and mesothorax densely covered with short white hair-like scales; metathorax dark brown to black with greenish-bronze sheen and few white and yellow-orange scales; thorax laterally dark brown to black with bright violet sheen, mesopleura with narrow yellow-orange stripe dorsally and small white spot medially on distal margin; posteriorly gray-brown densely covered with long silvery-white hair-like scales.

Legs: fore coxa black with dark violet sheen, white apex and small white with few yellow-orange scales spot exterior-basally; fore femur black with dark violet sheen, tufted with long dark brown scales with bronze-violet sheen posteriorly, dorsally with admixture of several white and yellow-orange scales; fore tibia and first basal tarsomere black with greenish sheen dorsally and dark greenish-violet sheen ventrally, tufted with long dark brown scales with bronze-violet sheen posteriorly, fore tibia dorsally with narrow oblique white stripe medially; second basal tarsomere dorsally black with greenish sheen and few yellow-orange scales, ventrally white with few

yellow-orange scales; remaining tarsomeres yellow-orange with golden sheen and few white scales ventrally; mid coxa dark brown to black with greenish-violet sheen and white posterior margin; remaining parts of mid legs broken off; hind coxa dark brown to black with dark greenish-violet sheen and admixture of several white scales; hind femur black with dark violet sheen and long hair-like white scales posteriorbasally; hind tibia and two basal hind tarsomeres dorsally tufted with long scales black with greenish sheen mixed with yellow-orange and white, ventrally hind tibia and two basal hind tarsomeres black with dark violet sheen and small white spot at base of apical spurs; spurs white with admixture of several black scales; remaining hind tarsomeres black with greenish sheen dorsally and dark violet sheen ventrally.

Forewing: costal and anal margin, CuA-stem, discal spot, veins within external transparent area and apical area black with dark violet sheen dorsally and ventrally with dark purple sheen and several yellow scales basally; discal spot narrow, but between veins M_1 – M_3 broadened up to middle of external transparent area; transparent areas rather well-developed, covered with hyaline scales with brownish tint; anterior transparent area divided transversely into two cells (distal one small); posterior transparent areas long, reaching level of posteriodistal angle of distal spot; external transparent area rather large, divided into six cells between veins R_{4+5} – CuA_2 , five of which between veins R_3 – CuA_1 divided into two additional cells by narrow scaled line; apical area extremely narrow, about 0.5 times as broad as cilia; cilia dark brown with dark bronze-violet sheen dorsally and bronze sheen ventrally.

Hindwing transparent; veins, discal spot and outer margin black with dark violet sheen dorsally and dark purple sheen ventrally; discal spot narrow, reaching base of vein M_2 ; outer margin narrow, about 0.5 times as broad as cilia; cilia dark brown with dark bronze-violet sheen dorsally and bronze sheen ventrally, anally taupe.

Abdomen: dorsally black with bright greenish-purple sheen; tergites 2 and 3 each admixed with thin yellow scales, more numerous laterally; distal row of scales of tergites 2 and 3 each dark grey with anthracitic sheen, but those of tergites 4–7 each bright greenish-blue; ventrally black with dark greenish-violet sheen; distal row of scales of each sternite white; sternites 3–6 each with yellow-orange scales laterally; anal tuft very small, black with greenish sheen and few white scales laterally.

Male genitalia (paratype; genital preparation No OG-017-2024) (Figs 9–11). Tegumen-uncus complex rather short and broad, uncus quadrangular entirely and densely covered with long hair-like setae (Fig. 9); gnathos narrow and short; valva (Fig. 9) strongly turned-up, distinctly narrowed and rounded distally, mostly covered with long hair-like setae; saccus (Fig. 9) slightly shorter than vinculum, broad, rounded basally; aedeagus (Fig. 10) relatively thin, slightly bisinuate, about twice as long as valva; vesica (Fig. 11) with numerous flat tile-shaped cornuti.

Female. Unknown.

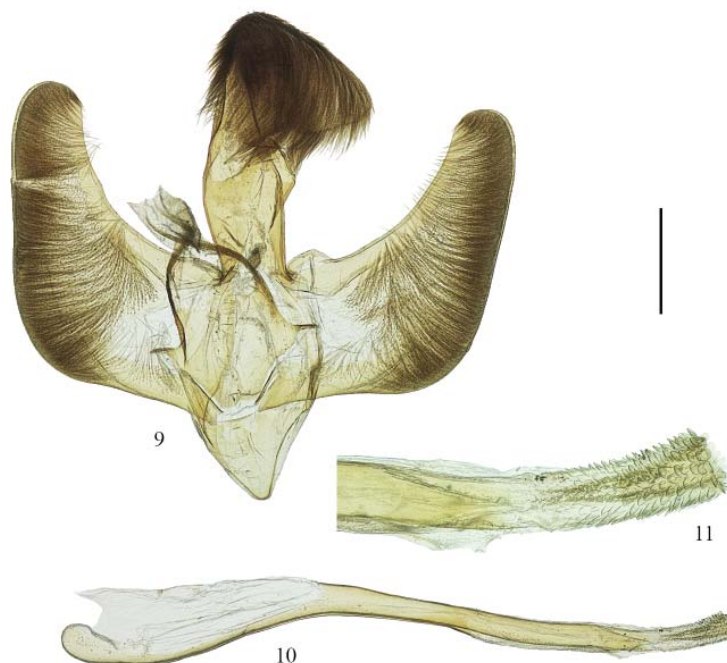
INDIVIDUAL VARIABILITY. Slightly varying in the number of yellow-orange and white scales on the labial palpus, legs and abdomen. In addition, this new species is somewhat variable in size: alar expanse: 21.9–22.5 mm; body length 11.5–12.3 mm; forewing 9.5–10.2; antenna 5.3–5.7 mm.

DIFFERENTIAL DIAGNOSIS. This new species seems to be the closest to *H. soljanikovi* (O. Gorbunov, 1988), from which it can be easily distinguished by the colour of the brightly coloured scales on the labial palpus and legs, which are not fire-red, but yellowish-orange (cp. Figs 1–2 with Figs 3–4). Besides this, these two species are separable by the number



Figs 1–8. Males of *Heterosphecia* spp.: 1–2 — *H. zamolodchikovi* O. Gorbunov, **sp.n.**, holotype, alar expanse 22.3 mm. Sesiidae picture Nos 0179-0180–2021; 3–4 — *H. soljanikovi* (O. Gorbunov, 1988), Laos, Khammouang Prov., Ban Khounkham (Nahin), 18°13'N, 104°31'E, 200 m, 23.IV.2005, O. Gorbunov leg. Alar expanse 23.0 mm. Sesiidae picture Nos 0181-0182–2021; 5–6 — *H. hyaloptera* (Hampson, 1919), Laos, Khammouang Prov., Ban Khounkham (Nahin), 18°13'N, 104°31'E, 200 m, 16.IV.2005, O. Gorbunov leg. Alar expanse 18.0 mm, Sesiidae picture Nos 0009-0010–2021; 7–8 — *H. melissoides* (Hampson, 1893), Laos, Khammouang Prov., Ban Khounkham (Nahin), 18°13'N, 104°31'E, 200 m, 15.IV.2005, O. Gorbunov leg. Alar expanse 23.2 mm, Sesiidae picture Nos 0031-0032–2021. 1, 3, 5, 7 — dorsal view; 2, 4, 6, 8 — ventral view.

Рис. 1–8. Самцы *Heterosphecia* spp.: 1–2 — *H. zamolodchikovi* O. Gorbunov, **sp.n.**, голотип, размах крыльев 22,3 мм. Сесииде снимки №№ 0179-0180–2021; 3–4 — *H. soljanikovi* (O. Gorbunov, 1988), Лаос, пров. Кхаммуан, Бан Хунхам (Нахин), 18°13' с.ш., 104°31' в.д., 200 м, 23.IV.2005, О. Горбунов leg. Размах крыльев 23,0 мм. Сесииде снимки №№ 0181-0182–2021; 5–6 — *H. hyaloptera* (Hampson, 1919), Лаос, пров. Кхаммуан, Бан Хунхам (Нахин), 18°13' с.ш., 104°31' в.д., 200 м, 16.IV.2005, О. Горбунов leg. Размах крыльев 18,0 мм, Сесииде снимки №№ 0009-0010–2021; 7–8 — *H. melissoides* (Hampson, 1893), Лаос, пров. Кхаммуан, Бан Хунхам (Нахин), 18°13' с.ш., 104°31' в.д., 200 м, 15.IV.2005, О. Горбунов leg. Размах крыльев 23,2 мм, Сесииде снимки №№ 0031-0032–2021. 1, 3, 5, 7 — вид сверху; 2, 4, 6, 8 — вид снизу.



Figs 9–11. Genitalia of *Heterosphecia zamolodchikovi* O. Gorbunov, **sp.n.**, paratype ♂. Genital preparation No OG–017–2024: 9 — ventral view; 10 — aedeagus; 11 — vesica. Scale bar 0.5 mm, 0.2 for 11.

Рис. 9–11. Гениталии *Heterosphecia zamolodchikovi* O. Gorbunov, **sp.n.**, паратип ♂. Препарат гениталий № OG–017–2024: 9 — вид снизу; 10 — эдеагус; 11 — везика. Масштаб 0,5 мм, 0,2 для 11.

of thin yellow scales on the tergites of the abdomen, which are more numerous, somewhat darker and present on tergites 2–4 in *H. soljanikovi*. From *H. hyaloptera* (Hampson, 1919), *H. zamolodchikovi* **sp.n.** clearly differs in the colouration of the thorax laterally (with large orange to yellow-orange spot anteriorly in the species compared, *vs.* mesopleura with narrow yellow-orange stripe dorsally and small white spot medially on distal margin in *H. zamolodchikovi* **sp.n.**; see fig. 4 in Arita, Gorbunov, 2000a) and abdomen dorsally (tergites 2–4 each laterally densely covered with thin yellow scales, distal raw of scales of all tergites black (few yellow scales on tergite 2) with dark violet sheen in *H. hyaloptera*, *vs.* tergites 2 and 3 each admixed with thin yellow scales, more numerous laterally; distal raw of scales of tergites 2 and 3 each dark grey with anthracitic sheen, but those of tergites 4–7 each bright greenish-blue in *H. zamolodchikovi* **sp.n.**; cp. Fig.1 with Fig. 5). In addition, these two species can be distinguished from each other by the structure of the transparent areas of the forewing, which are more developed in *H. hyaloptera* (cp. Figs 1–2 with Figs 5–6). Regarding the male genitalia, I did not find any significant differences in the genitalia of these three species.

From all other relatives, namely *H. melissoides* (Hampson, 1893), *H. indica* Kallies, 2003, *H. robinsoni* Kallies, 2003 and *H. tawanoides* Kallies, 2003, *H. zamolodchikovi* **sp.n.** easily differs in a more slender body (all of these compared species are noticeably heavier), less developed transparent areas of the forewing and, most importantly, the structure of the male genitalia (cp. Figs 9–11 with figs 2–4, 8, 10, 14, 15 in Arita, Gorbunov, 1995 and figs 1–7 in Kallies, 2003).

BIONOMICS. The larval host plant is unknown. The specimens of the type series exhibited a typical mud-puddling behaviour. All of them were found among bees and wasps on

wet soil on the bank of a small stream. The type series was collected in the second half of April and early May.

HABITAT. The type series was collected from moist soil on the banks of the Nam Sanam River in the vicinity of Nahin village in a primary monsoon semi-deciduous lowland tropical forest with *Dipterocarpus alatus* Roxb. ex G. Don, *Hopea odorata* Roxb., *H. ferrea* Laness. (Dipterocarpaceae), *Lagerstroemia cochinchinensis* Pierre ex Laness. (Lythraceae), *Azalia xylocarpa* (Kurz) Craib (Fabaceae) and *Alstonia scholaris* (L.) R. Br. (Apocynaceae) as the most dominant species.

DISTRIBUTION. The new species is known only from the type locality in Laos.

ETYMOLOGY. This new species is named after my friend, Prof. Dr Dmitry G. Zamolodchikov (Moscow, Russia), an excellent lepidopterist who provides all possible assistance on our joint trips to Southeast Asia.

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References

- Arita Y., Gorbunov O.G. 1995. A revision of the genus *Heterosphecia* Le Cerf, 1916 (Lepidoptera: Sesiidae, Osminiini) // *Tinea*. Vol.14. No.2. P.131–141.
- Arita Y., Gorbunov O.G. 2000a. Notes on the tribe Osminiini (Lepidoptera, Sesiidae) from Vietnam, with descriptions of new taxa // *Trans. Lepid. Soc. Jpn.* Vol.51. No.1. P.49–74.
- Arita Y., Gorbunov O.G. 2000b. On the knowledge of the genus *Chamanthodon* Le Cerf, 1916 (Lepidoptera, Sesiidae, Osminiini) of Vietnam and adjacent countries // *Trans. Lepid. Soc. Jpn.* Vol.51. No.3. P.205–214.
- Arita Y., Gorbunov O.G. 2001. Sesiidae of Taiwan. I. The Tribes Tinthiini, Similipepsini, Paraglosseciini, Pennisetiini, Paranthrenini and Cissuvorini // *Jpn. J. syst. Ent.* Vol.7. No.2. P.131–188.
- Arita Y., Gorbunov O.G. 2002. Sesiidae of Taiwan. II. The tribes Osminiini, Melittiini and Sesiini // *Jpn. J. syst. Ent.* Vol.8. No.2. P.199–241.
- Arita Y., Gorbunov O.G. 2003. New taxa of wasp-waisted clearwing moths (Lepidoptera, Sesiidae, Similipepsini) from Vietnam // *Trans. Lepid. Soc. Jpn.* Vol.54. No.1. P.11–19.
- Gorbunov O.G. 2015a. A new species of the genus *Anthodonella* O. Gorbunov et Arita, 1999 from the island of Siberut, Mentawai, Indonesia // *Far Eastern Entomologist*. No.299. P.11–17.
- Gorbunov O.G. 2015b. Clearwing moths (Lepidoptera: Sesiidae) of Laos. I. *Akaisphecia melanopuncta* O. Gorbunov, Arita, 1995 (Sesiidae: Sesiinae: Osminiini) // *Tropical Lepid. Research*. Vol.25. No.2. P.98–100.
- Gorbunov O.G. 2018. 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.
- Gorbunov O.G. 2021a. A new species of the genus *Pyrophleps* Arita et O. Gorbunov, 2000 (Lepidoptera: Sesiidae) from Laos, with remarks on the genus // *Russian Entomol. J.* Vol.30. No.2. P.166–174.
- Gorbunov O.G. 2021b. Review of the genus *Aschistophleps* Hampson, 1893 (Lepidoptera, Sesiidae) of Laos // *Zootaxa*. Vol.5020. No.2. P.384–396.
- Gorbunov O.G. 2021c. A new genus of the tribe Osminiini (Lepidoptera: Sesiidae) from the Oriental Region // *Far Eastern Entomologist*, No.439. P.1–13.
- Gorbunov O.G. 2022a. A new species of the genus *Tyriactaca* Walker, 1862 (Lepidoptera: Sesiidae) from West Malaysia with a catalogue of the genus // *Zootaxa*. Vol.5104. No.1. P.125–136.
- Gorbunov O.G. 2022b. A new species of the genus *Paranthrenopsis* (Lepidoptera: Sesiidae) from China with a catalogue of the genus // *Zoosystematica Rossica*. Vol.31. No.1. P.55–65.
- Gorbunov O.G. 2022c. A new species of the genus *Scoliokona* Kallies et Arita, 1998 (Lepidoptera: Sesiidae) from Halmahera, Indonesia // *Russian Entomol. J.* Vol.31. No.2. P.182–187.
- Gorbunov O.G. 2022d. A new species of the genus *Scarlata* (Lepidoptera: Sesiidae) from Laos // *Zoosystematica Rossica*. Vol.31. No.2. P.204–211.
- Gorbunov O.G. 2022e. A new species of the genus *Milisiopsis* O. Gorbunov et Arita, 1995 (Lepidoptera: Sesiidae) from Southeast Asia, with remarks on the genus // *Russian Entomol. J.* Vol.31. No.4. P.411–416.
- Gorbunov O.G. 2024. A new species of the genus *Paranthrenella* Strand, 1916 (Lepidoptera: Sesiidae) from Malaysia // *Far Eastern Entomologist*. No.494. P.1–13.
- Gorbunov O.G., Arita Y. 2000. Study on the Synanthedonini (Lepidoptera, Sesiidae) of Vietnam // *Jpn. J. syst. Ent.* Vol.6. No.1. P.85–113.
- Gorbunov O.G., Arita Y. 2001. A new species of the genus *Ravitria* Gorbunov & Arita (Lepidoptera, Sesiidae) from Yunnan, China // *Trans. Lepid. Soc. Jpn.* Vol.52. No.4. P.245–249.
- Gorbunov O.G., Arita Y. 2002. A new species of the genus *Aschistophleps* Hampson (Lepidoptera, Sesiidae) from Vietnam // *Trans. Lepid. Soc. Jpn.* Vol.53. No.4. P.193–196.
- Gorbunov O.G., Arita Y. 2005. A new genus and two new species of Synanthedonini (Lepidoptera, Sesiidae) from the Oriental Region // *Tinea* (Suppl.3). P.86–95.
- Gorbunov O.G., Arita Y. 2018. A new species of the genus *Sazonia* O. Gorbunov & Arita, 2001 from Vietnam (Lepidoptera: Sesiidae) // *Zootaxa*. Vol.4527. No.4. P.595–599.
- Gorbunov O.G., Arita Y. 2019. A new species of the genus *Taikona* O. Gorbunov & Arita, 2001 from Vietnam (Lepidoptera: Sesiidae) // *Zootaxa*. Vol.4624. No.1. P.137–141.
- Gorbunov O.G., Arita Y. 2020a. A new species of the genus *Toleria* Walker, 1865 [“1864”] from Vietnam, with a catalogue of Asian Cissuvorini (Lepidoptera: Sesiidae) // *Zootaxa*. Vol.4802. No.2. P.349–360.
- Gorbunov O.G., Arita Y. 2020b. A new species of the genus *Nokona* Matsumura, 1931 (Lepidoptera: Sesiidae) from Vietnam // *Russian Entomol. J.* Vol.29. No.2. P.195–198.
- Gorbunov O.G., Arita Y. 2020c. Two new species of the genus *Nokona* Matsumura, 1931 (Lepidoptera, Sesiidae) from Vietnam // *Far Eastern Entomologist*. No.412. P.1–12.
- Kallies A. 2003. Three new species of *Heterosphecia* Le Cerf, 1916 from the Oriental Region (Lepidoptera: Sesiidae, Sesiinae) // *Entom. Z. Bd.* 113. No. 2. S.34–37.
- Kallies A., Arita Y. 2001. The Tinthiinae of North Vietnam (Lepidoptera, Sesiidae) // *Jpn. J. syst. Ent.* Vol.52. No.3. P.187–235.
- Kallies A., Arita Y. 2004a. A survey of the clearwing moths of the tribe Sesiini (Lepidoptera, Sesiidae) from Vietnam and adjacent countries with a synopsis of the Oriental Sesiini fauna // *Tinea*. Vol.18. No.1. P.65–95.
- Kallies A., Arita Y. 2004b. New taxa and records of clearwing moths of the tribe Melittiini (Lepidoptera, Sesiidae) from Vietnam // *Jpn. J. syst. Ent.* Vol.10. No.2. P.193–209.
- Kallies A., Arita Y. 2005. Systematic position of the genus *Dasysphecia* (Lepidoptera, Sesiidae, Cissuvorini) with descriptions of two new bumble bee mimicking species from northern Vietnam // *Trans. Lepid. Soc. Jpn.* Vol.56. No.2. P.85–92.
- Kallies A., Arita Y. 2006. New wasp-waisted clearwing moths (Lepidoptera, Sesiidae, Tinthiinae) from Vietnam and Taiwan // *Trans. Lepid. Soc. Jpn.* Vol.57. No.4. P.371–377.
- Kallies A., Ogane H., Yata N. 2020. A new species of the genus *Toleria* Walker, [1865] from northern Vietnam and Laos with establishment of a generic synonymy of Cissuvorini (Lepidoptera, Sesiidae) // *Zootaxa*. Vol.4728. No.1. P.123–132.
- Kallies A., Štolc V. 2018. A new species of *Aschistophleps* from Thailand and Laos, with a new generic synonymy (Lepidoptera, Sesiidae) // *Zootaxa*. Vol.4446. No.4. P.596–600.
- Skowron Volponi M. 2020. A vivid orange new genus and species of Braconid-mimicking clearwing moth (Lepidoptera: Sesiidae) found puddling on Plecoptera exuviae // *Insects*. Vol.11. No.425. P.1–9.
- Skowron M.A., Munisamy B., Hamid S.B.A., Węgrzyn G. 2015. A new species of clearwing moth (Lepidoptera: Sesiidae: Osminiini) from Peninsular Malaysia, exhibiting bee-like morphology and behaviour // *Zootaxa*. Vol.4032. No.4. P.426–434.
- Skowron Volponi M.A., Volponi P. 2017a. A 130-year-old specimen brought back to life: a lost species of bee-mimicking clearwing moth (Lepidoptera: Sesiidae: Osminiini) rediscovered in Peninsular Malaysia’s primary rainforest // *Tropical Conservation Science*. No.10.1–7.
- Skowron Volponi M.A., Volponi P. 2017b. A new species of wasp-mimicking clearwing moth from Peninsular Malaysia with DNA barcode and behavioural notes (Lepidoptera, Sesiidae) // *ZooKeys*. No.692. P.129–139.
- Skowron Volponi M.A., Volponi P. 2018. A new species of bee-mimicking clearwing moth (Lepidoptera: Sesiidae) from Thailand, with description and video of its behavior // *J. Asia-Pacific Ent.* Vol.21. No.1. P.279–282.
- WFO 2024. World Flora Online. Online database. Available from: <https://www.worldfloraonline.org> (accessed 14 February 2024).