

## A new species of the genus *Paradoxecia* Hampson, 1919 (Lepidoptera: Sesiidae) from West Malaysia with a catalogue of the genus

### Новый вид рода *Paradoxecia* Hampson, 1919 (Lepidoptera: Sesiidae) из Западной Малайзии с каталогом рода

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KEY WORDS. Lepidoptera, Tinthiinae, clearwing moths, new species, new synonym, Oriental Region.

КЛЮЧЕВЫЕ СЛОВА. Lepidoptera, Tinthiinae, бабочки-стекляницы, новый вид, новый синоним, Ориентальный регион.

ABSTRACT. A new species, *Paradoxecia tuzovi* sp.n. from the state of Pahang, West Malaysia, is described and figured. The type series of the new species was collected with using artificial sex attractant. Types are deposited in the collections of the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia. The female and the larval host plant are still unknown. This is the first record of the genus to the continental part of Malaysia. Based on the female genitalia, as well as the external morphology, it has been established that *Paradoxecia pieli* Lieu, 1935 as a junior synonym for *Aegeria gravis* Walker, 1865, **syn.n.** An annotated catalogue of the genus *Paradoxecia* Hampson, 1919 is provided.

РЕЗЮМЕ. Приведено описание нового вида, *Paradoxecia tuzovi* sp.n. из штата Паханг, Западная Малайзия. Типовая серия нового вида была собрана с помощью искусственных половых аттрактантов. Типы хранятся в коллекции Института проблем экологии и эволюции им. А.Н. Северцова Российской академии наук в Москве. Самка и кормовое растение гусениц неизвестно. На основании гениталий самки, а также внешней морфологии установлено, что *Paradoxecia pieli* Lieu, 1935 является младшим синонимом *Aegeria gravis* Walker, 1865, **syn.n.** Приведён аннотированный каталог рода *Paradoxecia* Hampson, 1919.

#### Introduction

Our knowledge of the structure of the Oriental region's clearwing moth fauna has grown significantly over

the past quarter century. During this time, many very interesting and important works have been published about Sesiidae in Laos and Thailand [Arita, Gorbunov, 1995b, 1996a,b; Gorbunov, Arita, 1995e; Gorbunov, 2015b, 2021b–d; Skowron Volponi, 2019, 2020; etc.], Vietnam and Nepal [Gorbunov, Arita, 1995a–d, 1996a, 1997, 1999, 2000a, 2005, 2018b, 2019, 2020a–c; Arita, Gorbunov, 1995a–c, 2000a–c, 2002a, 2003; etc.], South China and Taiwan [Arita, Gorbunov, 1998, 2001a, 2002a; Kallies, Arita, 1998a; Xu et al., 1999, 2015, 2019; Gorbunov, Arita, 2000b, 2001a,b; 2002a; Kallies et al., 2014a, b; Arita et al., 2018; etc.], Malaysia and Indonesia [Gorbunov, Kallies, 1998; Arita et al., 2003; Gorbunov, Arita, 2005, 2015, 2018a; Gorbunov, 2014, 2015a, 2016, 2018, 2020, 2021a; Skowron et al., 2015; Skowron Volponi, Volponi, 2017, etc.], and the Philippines [Gorbunov, Kallies, 1998; Kallies, Arita, 1998b].

Undoubtedly, the recently published works with illustrations of types of Chinese and Oriental Sesiidae will be of great help in understanding the clearwing moths of the Oriental region [Arita et al., 2021a, b].

As for genus *Paradoxecia* Hampson, 1919, a very detailed nomenclature history with a key based on external characters to the species of this taxon was published quite recently [Yu et al., 2019]. The authors attributed 16 species to the genus, including three species that were described as new. After analyzing all the available information, including illustrative material on both male and female genitalia, I concluded that genus *Paradoxecia* as it is currently adopted, is heterogeneous. Superficially, as well as in the structure of both male and female genitalia, this genus should be divided into at least two or even three taxa of the genus group

level. Unfortunately, the lack of sufficient material does not allow me to do this formally right now. Besides this, I believe that *Aegeria gravis* Walker, 1865 and *Paradoxecia pieli* Lieu, 1935 are conspecific (see below) and establish *P. pieli* as a junior synonym for *P. gravis*, **syn.n.**

The present paper presents the description of a new species, *Paradoxecia tuzovi* **sp.n.** In addition, I provide an annotated catalogue of the genus *Paradoxecia*, which contains updated taxonomic information including references to the original descriptions, information on name-bearing types, complete bibliographies, data on flight period and distribution of all 16 species.

The descriptions of the specimens were made using a Leica EZ4 stereomicroscope with LED illumination. All images of the type series were taken with a Sony®  $\alpha$ 450 DSLR camera equipped with a Minolta® 50 mm f/2.8 Macro lens. The genitalia were photographed using a Keyence® BZ-9000 Bioevo Fluorescence Microscope. The processing of all illustrations was finalized with 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 of the holotype and paratypes 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 labeled 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 0279-0280–2021). 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–017-2021) is pinned under the specimen and listed in the author’s archive.

The material studied or mentioned herein is deposited in the following collections abbreviated in the text as follows:

- BMNH — the Natural History Museum (formerly the British Museum (Natural History)), London, UK;
- COGM — the A.N. Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences, Moscow, Russia;
- ZFMK — Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany;
- MHNG — Muséum d’histoire naturelle de la Ville de Genève, Genève, Switzerland;
- NRMS — Naturhistoriska riksmuseet, Stockholm, Sweden;
- NSMT — the National Museum of Nature and Science, Tsukuba, Tokyo (formerly Natural Science Museum Tokyo), Japan;
- SCAU — the Department of Entomology, South China Agricultural University, Guangzhou, Guangdong, China.

## Taxonomic account

### *Paradoxecia tuzovi* O. Gorbunov, **sp.n.**

Figs 1–10.

**MATERIAL.** **Holotype** ♂ (Figs 1–2) with labels: “W. Malaysia, Pahang, / Genting Highland, 800–1000 m, / 03° 22’ N, 101° 47’ E, / 17–23.X.2010, / V. Tuzov leg.” (white); “SESIIDAE / Pictures Nos / 0279-0280–2021 / Photo by O. Gorbunov” (white); “HOLOTYPE ♂ / *Paradoxecia tuzovi* / O. Gorbunov, 2021 / O. Gorbunov des., 2020” (red) (COGM).

**Paratypes** 6 ♂♂ (Figs 3–6), same locality and date, V. Tuzov leg. (Sesiidae pictures Nos 0269-0278–2021), 1 ♂ with genitalia preparation No OG–017-2021 (Figs 7–10) (COGM).

**DESCRIPTION.** **Male** (holotype) (Figs 1–2). Alar expanse 26.1 mm; body length 11.9 mm; forewing 12.0 mm; antenna 5.5 mm.

Head with antenna black with dark greenish-blue sheen; scapus grey-brown with blue-purple sheen; frons ventrally pale lemon yellow, but remaining part entirely covered with scales of vertex; basal joint of labial palpus lemon yellow, mid and apical joints whitish; vertex grey-brown with greenish-bronze sheen; pericephalic hairs whitish with a few grey-brown scales dorsally.

Thorax with patagia grey-brown with blue-violet sheen and a few lemon yellow scales laterally; tegula grey-brown with greenish-violet sheen, a few lemon yellow scales anteriorly at inner margin and narrow lemon yellow exterior and posterior margins; mesothorax grey-brown with greenish-violet sheen; metathorax lemon yellow with a few grey-brown scales medially; pro- and mesothorax laterally mixed with grey-brown with bright violet sheen and lemon yellow with golden hue scales; metathorax laterally completely lemon yellow with golden hue; posteriorly both metepimeron and metameron smooth scaled lemon yellow with golden hue.

Legs with neck plate yellowish; fore coxa lemon yellow with golden hue and narrow grey-brown interior and posterior margins; fore femur externally lemon yellow with an admixture of individual grey-brown scales, internally entirely lemon yellow with golden hue; fore tibia externally mixed with grey-brown, dark yellow and lemon yellow scales, internally entirely lemon yellow with golden hue; fore tarsus grey-brown with bronze sheen and an admixture of a few dark yellow scales on basal tarsomere; mid coxa pale yellow with a few lemon yellow scales anteriorly; mid femur lemon yellow with golden hue and a few grey-brown scales exteriorly; mid tibia and spurs entirely lemon yellow with golden hue; basal tarsomere of mid tarsus lemon yellow with golden hue, remaining tarsomeres grey-brown with bronze sheen mixed with lemon yellow scales both internally and ventrally; hind coxa pale yellow with a few lemon yellow scales anteriorly; hind femur lemon yellow with golden hue and a narrow grey-brown anterior margin; hind tibia lemon yellow with golden hue and with an admixture of grey-brown scales with blue-bronze sheen dorsally both from base of tibia to base of mid spurs and distally; spurs whitish; three basal tarsomeres of hind tarsus each dorsally grey-brown with blue-bronze sheen and a few dark yellow scales distally, ventrally entirely lemon yellow with golden hue, two distal tarsomeres yellowish.

Forewing dorsally black with greenish-violet sheen and a small lemon yellow spot at base; costal margin dark brown with violet sheen; CuA-stem, anal margin, discal spot and veins within external transparent area dark brown with bronze sheen; discal spot narrow and small between bases of veins  $M_2$ – $CuA_1$ ; transparent areas well-developed but densely covered with hyaline scales with brownish hue; external transparent area long and narrow between veins  $M_1$ – $CuA_1$ ; posterior

transparent area long, distinctly exceeding level of discal spot; outer margin undeveloped; cilia dark brown with bronze sheen; ventrally opaque parts dark brown with bronze-violet sheen and a few yellow scales; cilia dark brown with bronze sheen.

Hindwing transparent but covered with sparse hyaline scales with brownish hue; veins narrowly dark brown with bronze sheen; both discal spot and outer margin undeveloped; cilia dark brown with bronze sheen.

Abdomen wasp-waisted: segments 1 and 2 slightly narrowed, segments 3–5 gradually broadened and segments 6–8 gradually narrowed; dorsally tergite 1 dark brown with greenish-violet sheen medially and yellow laterally; tergites 2–4 each dark brown with greenish-violet sheen and a narrow yellow stripe cranially; tergites 5–8 dark brown with bronze-violet sheen, tergites 5–7 each with a narrow yellow stripe caudally; ventrally sternites 1+2–4 each white with an admixture of individual lemon-yellow scales; sternites 5–8 each lemon yellow with a few white scales; anal tuft extremely small yellow.

**Male genitalia** (paratype) (genital preparation No OG-017-2021) (Figs 7–10).

**Female.** Unknown.

**INDIVIDUAL VARIABILITY.** Slightly varying in the number of lemon yellow scales on the thorax and yellow scales on the abdomen (Figs 1–6). Besides this, this new species is somewhat variable in individual size: alar expanse 25.0–26.1 mm; body length 11.8–12.2 mm; forewing 11.7–12.0 mm; antenna 5.2–5.5 mm.

**DIFFERENTIAL DIAGNOSIS.** Superficially this new species is somewhat similar to *P. radiata* Kallies, 2002, but it differs by the conformation of the forewing (forewing covered with light yellow-brown semitransparent scales; veins marked by dense brown scales; common M-stem strongly reduced but clearly marked by a row of brown scales in *P. radiata*; compare Figs 1, 3 and 5 with fig. 1 in Kallies, 2002), by the colouration of the hind leg (hind coxa brownish-grey; hind femur externally brownish-grey with a yellow posterior margin; hind tibia fuscous, ventrally and medially yellow; spurs yellow; hind tarsus yellow with fuscous basal tarsomere dorsally in the species compare, vs. hind femur lemon yellow with golden hue and a narrow grey-brown anterior margin; hind tibia lemon



Figs 1–6. Variability of *Paradoxecia tuzovi* O. Gorbunov, **sp.n.**: 1–2 — holotype, alar expanse 26.1 mm, Sesiidae picture Nos 0279-0280–2021; 3–4 — paratype, alar expanse 25.4 mm, Sesiidae picture Nos 0273-0274–2021; 5–6 — paratype, alar expanse 25.0 mm, Sesiidae picture Nos 0277-0278–2021; 1, 3, 5 — dorsal view; 2, 4, 6 — ventral view.

Рис. 1–6. Изменчивость *Paradoxecia tuzovi* O. Gorbunov, **sp.n.**: 1–2 — голотип, размах крыльев 26,1 мм, Sesiidae снимки №№ 0279-0280–2021; 3–4 — паратип, размах крыльев 25,4 мм, Sesiidae снимки №№ 0273-0274–2021; 5–6 — паратип, размах крыльев 25,0 мм, Sesiidae снимки №№ 0277-0278–2021; 1, 3, 5 — сверху; 2, 4, 6 — снизу.

yellow with golden hue and with an admixture of grey-brown scales with blue-bronze sheen dorsally both from base of tibia to base of mid spurs and distally; spurs whitish; three basal tarsomeres of hind tarsus each dorsally grey-brown with blue-bronze sheen and a few dark yellow scales distally, ventrally entirely lemon yellow with golden hue, two distal tarsomeres yellowish in *P. tuzovi* **sp.n.**) and abdomen (dorsally tergite 1 yellow with a few black scales; tergites 2–6 each blackish-grey; tergites 4–5 each with a narrow yellow stripe distally; ventrally pale yellow; sternites 6–7 each with an admixture of gray scales; anal tuft yellow-grey medially in *P. radiata*; compare Figs 1–6 with Figs 1 and 2 in Kallies, 2002). By the structure of the aedeagus in the male genitalia *P. tuzovi* **sp.n.** is closely related to *P. myrmeekomorpha* (Bryk, 1947), *P. dizona* (Hampson, 1919), and *P. fukiensis* O. Gorbunov et Arita, 1997, but it can be distinguished from all of them by the colouration of

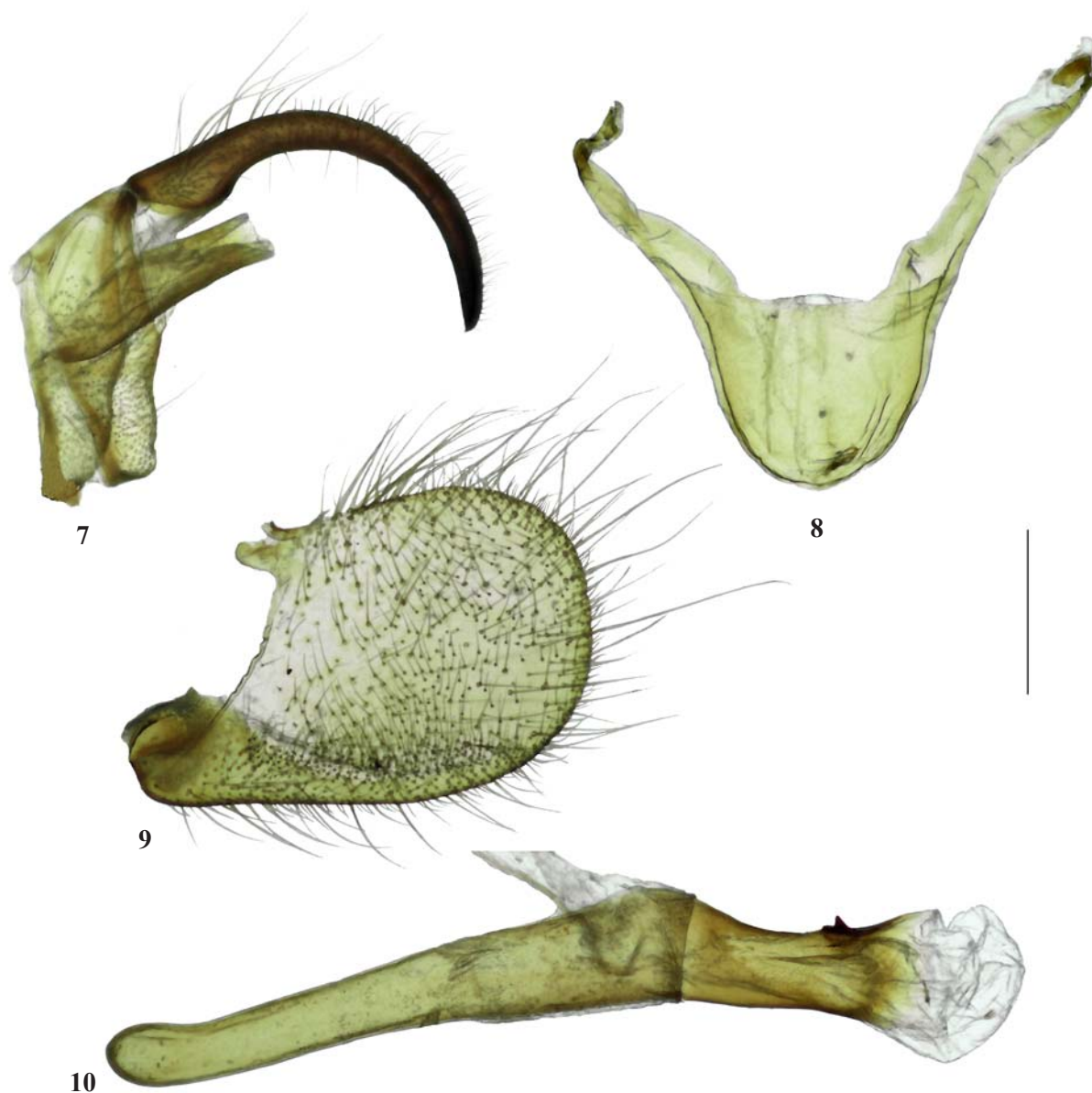
various parts of the body, especially by the absent of orange or yellow-orange scales on the abdomen.

**BIONOMICS.** The larval host plant is unknown. The type series was collected in the second half of October with help of unspecific artificial sex pheromones.

**HABITAT.** The type series was collected at the border of Upper dipterocarp forest at 800–1000 m a.s.l. with *Shorea* sp., *Dipterocarpus* sp. (*Dipterocarpaceae*), *Agathis borneensis* Warb. (*Araucariaceae*) and *Calophyllum* sp. (*Clusiaceae*) as dominant species.

**DISTRIBUTION.** The new species is known only from the type locality in the state of Pahang, West Malaysia.

**ETHYMOLOGY.** This new species is named after my friend Dr. Vasily K. Tuzov, a great expert on Papilionoidea of the world fauna, who collected the type series of this new species.



Figs 7–10. Male genitalia of *Paradoxecia tuzovi* O. Gorbunov, **sp.n.** Genital preparation No OG–017–2021: 7 — tegumen-uncus complex; 8 — valva; 9 — saccus; 10 — aedeagus. Scale bar: 0.5 mm.

Рис. 7–10. Гениталии самца *Paradoxecia tuzovi* O. Gorbunov, **sp.n.** Препарат гениталий № OG–017–2021: 7 — тегумен-ункус комплекс; 8 — вальва; 9 — саккус; 10 — эдеагус. Масштаб: 0,5 мм.

Catalogue of the genus *Paradoxecia* Hampson 1919*Paradoxecia* Hampson, 1919

“Gen. *Paradoxecia* nov.” — Hampson, 1919: 51 (key), 114. Type species: *Aegeria gravis* Walker, 1865, by original designation. = “Genus *Paranthrenina* m. (nov. gen.)” — Bryk, 1947: 106. Type species: *Paranthrenina myrmekomorpha* Bryk, 1947, by original designation.

LITERATURE. Dalla Torre, Strand, 1925: 180 (*Paradoxecia*); Gaede, 1933: 797 (*Paradoxecia*); Lieu, 1935: 191 (*Paradoxecia*); Naumann, 1971: 22 (*Paranthrenina*), 22, 55 (*Paradoxecia*); Heppner, Duckworth, 1981: 21 (*Paradoxecia*), 24 (*Paranthrenina*); Fletcher, Nye, 1982: 118 (*Paradoxecia*), 119 (*Paranthrenina*); Gorbunov, Arita, 1997: 60 (*Paradoxecia*); Špatenka et al., 1999: 49 (*Paradoxecia*); Kallies, Arita, 2001: 214 (*Paradoxecia*); Gorbunov, Arita, 2001c: 17 (*Paranthrenina*); Pühringer, Kallies, 2004: 7 (*Paradoxecia*); Yu et al., 2019: 262 (*Paradoxecia*); Xu et al., 2019: 29 (key), 35 (*Paradoxecia*); Pühringer, Kallies, 2021 (*Paradoxecia*).

RANGE. Oriental realm from North-eastern India (Meghalaya) in the west to the South-western Japan (Okinawa-jima) in the east and from Central China (Jiangsu and Hubei) in the north and Malaysia (Sarawak) in the south.

*Paradoxecia beibengensis* Yu et Kallies, 2019

“*Paradoxecia beibengensis* Yu et Kallies sp. nov.” — Yu et al., 2019: 264, 268 (key), figs 5, 6, 9. Type locality: “China, Tibet autonomous region, Medog county, Beibeng, 29° 14′ 11.28″ N, 95° 09′ 51.52″ E, ...”. Holotype ♂ (SCAU).

LITERATURE. Pühringer, Kallies, 2021 (*Paradoxecia beibengensis*).

FLIGHT PERIOD. The holotype was collected on the 25<sup>th</sup> July.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in Tibet, China.

REMARKS. The female is unknown.

*Paradoxecia chura* Arita, Kimura et Owada, 2009

“*Paradoxecia chura* sp. nov.” — Arita et al., 2009: 189, Fig. 1. Type locality: “... Is. Okinawa-jima, Okinawa-ken, Nakijin-son, Oppadake, ...”. Holotype ♂ (NSMT).

LITERATURE. Yu et al., 2019: 267 (key) (*Paradoxecia chura*); Pühringer, Kallies, 2021 (*Paradoxecia chura*).

FLIGHT PERIOD. The holotype was collected on the 12<sup>th</sup> September.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in the island of Okinawa, Japan.

REMARKS. The female is unknown and the male genitalia have not yet been investigated.

*Paradoxecia dizona* (Hampson, 1919)

“*Trichocerota dizona* n. sp.” — Hampson, 1919: 117. Type locality: “Assam, Khásis, ...” [= India: Meghalaya, Shillong Plateau, Khasi Hills]. Holotype ♀ (BMNH).

LITERATURE. Dalla Torre, Strand, 1925: 184 (*Trichocerota dizona*); Gaede, 1933: 799, pl. 94, row i (*Trichocerota dizona*); Heppner, Duckworth, 1981: 22 (*Trichocerota dizona*); Kallies, Arita, 2001: 189, 219, figs 22, 23, 39, 52 (*Paradoxecia dizona*); Pühringer, Kallies, 2004: 7 (*Paradoxecia dizona*); Arita et al., 2018: 8, pl. 1, fig. 9 (*Paradoxecia dizona*); Yu et al., 2019: 268 (key) (*Paradoxecia dizona*); Pühringer, Kallies, 2021 (*Paradoxecia dizona*); Arita et al., 2021b: 8, figs 23a–b (*Paradoxecia dizona*).

FLIGHT PERIOD. The holotype was collected in July. Specimens from Vietnam were catch in May and June.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from North-eastern India, South China and North Vietnam.

*Paradoxecia fukiensis* O. Gorbunov et Arita, 1997

“*Paradoxecia fukiensis* sp. n.” — Gorbunov, Arita, 1997: 61 (key), 65, figs 5–6, 9, 10a–d. Type locality: “China, Fukien, Kuatun, 2300 m, 27–40 N, 117–40 E, ...” [= China: Fujian, Wuyishan, Guadun]. Holotype ♀ (ZFMK).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia fukiensis*); Yu et al., 2019: 268 (key) (*Paradoxecia fukiensis*); Pühringer, Kallies, 2021 (*Paradoxecia fukiensis*).

FLIGHT PERIOD. The type series was collected in June.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in the province Fujian, China.

*Paradoxecia gravis* (Walker, 1865\*)

“*Aegeria gravis*.” — Walker, 1865 [“1864”]: 12). Type locality: “... North China.” [= China: environs of Shanghai (?)]. Holotype ♀ (BMNH).

= “*Paradoxecia pieli* n. sp.” — Lieu, 1935: 185, pls I–V. Type locality: “... Kashing; ... Kon-Zen-Chiao, Hang-hsien, Hai-ning, and, Chang-an.” [= China: Zhejiang province, Hangzhou, Jiaving, Haining]. Holotype ♂ (probably lost). **Syn.n.**

LITERATURE. Hampson, 1919: 114 (*Paradoxecia gravis*); Dalla Torre, Strand, 1925: 180 (*Paradoxecia gravis*); Gaede, 1933: 797 (*Paradoxecia gravis*); Naumann, 1971: 55, figs 18, 57, 172 (*Paradoxecia gravis*); Heppner, Duckworth, 1981: 22 (*Paradoxecia gravis*, *Paradoxecia pieli*); Špatenka et al., 1993: 85 (*Paradoxecia gravis*); Gorbunov, Arita, 1997: 61, figs 1, 2 (*Paradoxecia gravis*), 61 (key), 62, fig. 3 (*Paradoxecia pieli*); Špatenka et al., 1999: 50, pl. 2, fig. 15, text-fig. 285 (*Paradoxecia gravis*); Pühringer, Kallies, 2004: 7 (*Paradoxecia gravis*, *Paradoxecia pieli*); Arita et al., 2018: 8, pl. 1, fig. 12 (*Paradoxecia gravis*); Yu et al., 2019: 267 (key) (*Paradoxecia pieli*), 268 (key) (*Paradoxecia gravis*); Xu et al., 2019: 35 (key), 36 (*Paradoxecia gravis*, *Paradoxecia pieli*); Pühringer, Kallies, 2021 (*Paradoxecia gravis*, *Paradoxecia pieli*); Arita et al., 2021b: 8, figs 22a–b (*Aegeria gravis*), 8, figs 24a–d (*Paradoxecia pieli*).

FLIGHT PERIOD. The holotype of *P. gravis* was caught in August [“54.8.”], but the specimens of the type series of *P. pieli* were emerged from pupae between June 20<sup>th</sup> and July 12<sup>th</sup>.

HOST PLANT. Larvae of *P. pieli* live inside twigs of *Morus* sp., Moraceae.

DISTRIBUTION. It is known from the provinces of Jiangsu, Zhejiang, Sichuan, Guizhou, Fujian, Guangdong and, possible, environs of Shanghai, China.

REMARKS. 1. The holotype of *P. gravis* was described from “North China”, which in the middle of the 19th century for the British, during the Opium Wars, could not have been located north of the Shanghai region. 2. *P. pieli* was described on the basis of 17 males (holotype and 16 paratypes) and 11 females (allotype and 10 paratypes) bred from larvae collected inside the twigs of cultivated mulberry trees (*Morus* sp., Moraceae) from at least five localities in Zhejiang province. Unfortunately, the author did not indicate from which particular locality the holotype originated, and its very probable loss does not allow establishing the exact type locality. 3. Unfortunately, the genitalia of the holotype of *P. gravis* are not studied, but at least the genitalia of two females, which are attributed to this species, were studied [Naumann, 1971: fig. 172; Špatenka et al., 1999: fig. 285] and I consider these images to be completely consistent with the images presented in the original description of *P. pieli* [Lieu, 1935: pl. III, figs 18–20]. The original descriptions, as well as photographs of the types of these two taxa, allow me to conclude that *Paradoxecia pieli* Lieu, 1935 is a junior synonym of *Aegeria gravis* Walker, 1865, **syn.n.**

\* According to Sherborn, the actual date of publication of the Supplement of the XXXI part of the List of the specimens of Lepidopterous Insects in the collection of the British Museum is February 11<sup>th</sup>, 1865 [Sherborn, 1934].

*Paradoxecia karubei* Kallies et Arita, 2001

"*Paradoxecia karubei* sp. nov." — Kallies, Arita, 2001: 189, 218, figs 21, 51. Type locality: "N. Vietnam, Ninh Binh Prov., Gia Vien, Cuc Phuong, 370 m, ...". Holotype ♀ (NSMT).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia karubei*); Yu et al., 2019: 268 (key) (*Paradoxecia karubei*); Pühringer, Kallies, 2021 (*Paradoxecia karubei*)

FLIGHT PERIOD. The type series was collected in April–May.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from two localities in North Vietnam.

REMARKS. The male is unknown.

*Paradoxecia kishidai* Yu et Arita, 2019

"*Paradoxecia kishidai* Yu et Arita sp. nov." — Yu et al., 2019: 262, figs 1, 2, 7. Type locality: "China, Hubei Province, Shennongjia, Songbai town, 31° 44' 21.30" N, 110° 41' 15.62" E, ...". Holotype ♂ (SCAU).

LITERATURE. Yu et al., 2019: 268 (key) (*Paradoxecia kishidai*); Pühringer, Kallies, 2021 (*Paradoxecia kishidai*).

FLIGHT PERIOD. The holotype was collected on August 8<sup>th</sup>.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in the province of Hubei, China.

REMARKS. The female is unknown.

*Paradoxecia luteocincta* Kallies et Arita, 2001

"*Paradoxecia luteocincta* sp. nov." — Kallies, Arita, 2001: 189, 217, fig. 20. Type locality: "N. Vietnam, Ninh Binh Prov., Gia Vien, Cuc Phuong, 370 m, ...". Holotype ♀ (NSMT).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia luteocincta*); Yu et al., 2019: 268 (key) (*Paradoxecia luteocincta*); Pühringer, Kallies, 2021 (*Paradoxecia luteocincta*).

FLIGHT PERIOD. The holotype was collected on April 28<sup>th</sup>.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in North Vietnam.

REMARKS. The male is unknown and the female genitalia have not yet been studied.

*Paradoxecia myrmekomorpha* (Bryk, 1947)

"*Paranthrenina myrmekomorpha* m." — Bryk, 1947: 106, Taf. 1, Fig. 9. Type locality: "NO Birma, Kambaiti, 6000 Fs. ..." [= Myanmar: Kachin State, Kambaiti Pass]. Holotype ♀ (NRMS).

LITERATURE. Naumann, 1971: 22 (*Paranthrenina myrmekomorpha*); Heppner, Duckworth, 1981: 24 (*Paranthrenina myrmekomorpha*); Kallies, Arita, 2001: 189, 215, figs 18, 19, 38 (*Paradoxecia myrmekomorpha*); Gorbunov, Arita, 2001: 19, figs 5, 6, 27 (*Paranthrenina myrmekomorpha*); Pühringer, Kallies, 2004: 7 (*Paradoxecia myrmekomorpha*); Arita, 2011: 37, pl. 3, fig. 23 (*Paradoxecia myrmekomorpha*); Arita et al., 2018: 8, pl. 1, figs 10, 11 (*Paradoxecia myrmekomorpha*); Yu et al., 2019: 268 (*Paradoxecia myrmekomorpha*); Pühringer, Kallies, 2021 (*Paradoxecia myrmekomorpha*); Arita et al., 2021b: 36, figs 388a–b (*Paradoxecia myrmekomorpha*).

FLIGHT PERIOD. The holotype was collected on June 8<sup>th</sup>. Specimens from Vietnam were catch in the end of June.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from the type locality in North-eastern Myanmar, South China and North Vietnam.

*Paradoxecia polyzona* Yu et Kallies, 2019

"*Paradoxecia polyzona* Yu et Kallies, sp. nov." — Yu et al., 2019: 263, 268 (key), figs 3, 4, 8. Type locality: "China, Tibet autonomous region, Linzhi, Bomi county, Tongmai town, 30° 05' 49.44" N, 95° 04' 01.07" E, ...". Holotype ♂ (SCAU).

LITERATURE. Pühringer, Kallies, 2021 (*Paradoxecia polyzona*).  
FLIGHT PERIOD. The type series was collected at the end of July.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from Tibet, China.

REMARKS. The female is unknown.

*Paradoxecia radiata* Kallies, 2002

"*Paradoxecia radiata* sp. n." — Kallies, 2002: 207, figs 1–4. Type locality: "Sarawak: Mt Dulit. / 4,000 ft. / Moss Forest. ..." [= Malaysia: Sarawak, Mt Dulit]. Holotype ♀ (BMNH).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia radiata*); Yu et al., 2019: 267 (key) (*Paradoxecia radiata*); Pühringer, Kallies, 2021 (*Paradoxecia radiata*).

FLIGHT PERIOD. The holotype was collected on October 24<sup>th</sup>.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality on the island of Borneo.

REMARKS. The male is unknown.

*Paradoxecia similis* Arita et O. Gorbunov, 2001

"*Paradoxecia similis* sp. nov." — Arita, Gorbunov, 2001: 138, figs 5, 46a–d. Type locality: "Taiwan, Nantou Hsien, Meiyuan, ...". Holotype ♂ (NSMT).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia similis*); Yu et al., 2019: 268 (key) (*Paradoxecia similis*); Pühringer, Kallies, 2021 (*Paradoxecia similis*).

FLIGHT PERIOD. Specimens of the type series were collected on July 4<sup>th</sup> and November 13<sup>th</sup>.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from the island of Taiwan only.

REMARKS. The female is unknown.

*Paradoxecia taiwana* Arita et O. Gorbunov, 2001

"*Paradoxecia taiwana* sp. nov." — Arita, Gorbunov, 2001: 135, figs 3, 4, 45a–d. Type locality: "Taiwan, Nantou Hsien, Penpu-chi, ca 1,000 m, ...". Holotype ♂ (NSMT).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia taiwana*); Yu et al., 2019: 268 (key) (*Paradoxecia taiwana*); Pühringer, Kallies, 2021 (*Paradoxecia taiwana*).

FLIGHT PERIOD. The type series was collected from mid-May to early October.

HOST PLANT. Unknown.

DISTRIBUTION. It is known from the island of Taiwan only.

REMARKS. The female genitalia have not yet been studied.

*Paradoxecia tristis* Kallies et Arita, 2001

"*Paradoxecia tristis* sp. nov." — Kallies, Arita, 2001: 221, figs 24, 25, 40, 53. Type locality: "Viet Nam, Prov. Ha Noi, Ha Noi City, ...". Holotype ♂ (BMNH).

LITERATURE. Pühringer, Kallies, 2004: 7 (*Paradoxecia tristis*); Yu et al., 2019: 268 (key) (*Paradoxecia tristis*); Pühringer, Kallies, 2021 (*Paradoxecia tristis*).

FLIGHT PERIOD. The type series was collected from the end of April to the end of June.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from two localities in North Vietnam.

REMARKS.

*Paradoxecia tuzovi* O. Gorbunov, **sp.n.**

"*Paradoxecia tuzovi* O. Gorbunov, **sp.n.**" — present publication, Figs 1–10. Type locality: "W. Malaysia, Pahang, Genting Highland, 800–1000 m, ...". Holotype ♂ (COGM).

FLIGHT PERIOD. The type series was collected on October 17–23<sup>th</sup>.

HOST PLANT. Unknown.  
DISTRIBUTION. It is known from the type locality in Malaysia.

REMARKS. The female is unknown.

*Paradoxecia vietnamica* O. Gorbunov et Arita, 1997

“*Paradoxecia vietnamica* sp. n.” — Gorbunov, Arita, 1997: 61 (key), 62, figs 4, 8. Type locality: “Vietnam, Pahia, ...” [= North Vietnam]. Holotype ♀ (MHNG).

LITERATURE. Kallies, Arita, 2001: 189, 217 (*Paradoxecia vietnamica*); Pühringer, Kallies, 2004: 7 (*Paradoxecia vietnamica*); Yu et al., 2019: 267 (key) (*Paradoxecia vietnamica*); Pühringer, Kallies, 2021 (*Paradoxecia vietnamica*).

FLIGHT PERIOD. The holotype collected on May 24<sup>th</sup>.

HOST PLANT. Unknown.

DISTRIBUTION. It is only known from the type locality in North Vietnam.

REMARKS. The male is unknown.

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