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A new species of the genus *Nokona* Matsumura, 1931 (Lepidoptera: Sesiidae) from Vietnam

Новый вид рода *Nokona* Matsumura, 1931 (Lepidoptera: Sesiidae) из Вьетнама

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KEY WORDS: Lepidoptera, Paranthreninae, Paranthrenini, clearwing moths, *Nokona*, new species, Oriental Region, Vietnam.

КЛЮЧЕВЫЕ СЛОВА: Lepidoptera, Paranthreninae, Paranthrenini, бабочки-стеклянницы, *Nokona*, новый вид, Ориентальный регион, Вьетнам.

ABSTRACT. A new species, *Nokona onoderai* **sp.n.** from Vietnam, is described and illustrated. The holotype is deposited in the collections of National Museum of Nature and Science, Tsukuba (formerly Natural Science Museum Tokyo), Japan. The female and the larval host plant are unknown. The genus *Nokona* was previously unrecorded in the country.

РЕЗЮМЕ. Дано иллюстрированное описание нового вида бабочек-стеклянниц из Вьетнама: *Nokona onoderai* **sp.n.** Голотип хранится в коллекции Национального музея природы и науки (бывший Естественно-исторический музей в Токио), Япония. Самка и кормовое растение не известны. Это первое упоминание рода в фауне Вьетнама.

Introduction

The genus *Nokona* was described by Matsumura as a subgenus of *Paranthrene* Hübner, 1819 [“1816”] with *Paranthrene yesonica* Matsumura, 1931 [= *Sciapteron ferale* Leech, 1889] as the type species [Matsumura, 1931a, b; Yata et al., 2017]. According to our data the genus, in its modern interpretation, is polyphyletic [Gorbunov, Arita, 2015, 2020]. It distributes in the eastern part of Palaearctic, Oriental and Australian regions and includes circa 50 species [Gorbunov, Arita, 1995, 2001; Arita, Gorbunov, 2001; Pühringer, Kallies, 2004; Kallies et al., 2014; Gorbunov, 2016; Gorbunov, Arita, 2020].

According to the structure of male and female genitalia and the biological features of the larvae, *Nokona* (sensu lato) can be clearly divided into several groups [Gorbunov, 2016]. The new species described below seems to be a member of the *N. regalis* (Butler, 1878) species-group.

The taxa of the tribe Paranthrenini of Vietnam are practically unknown. Until now only *Taikona ikedai* O. Gorbunov et Arita, 2019 is known to occur in Vietnam [Gorbunov, Arita, 2019]. Besides this, two new species of the genus *Nokona* are now in a process of publication [Gorbunov, Arita, 2020]. Thus, together with the new species described below, we record only four species from two genera in the fauna of Vietnam.

Material and methods

The holotype was described using a Leica EZ4 stereomicroscope with LED illuminations, and images were taken with a Sony® α450 DSLR camera equipped with a Minolta® 50 f/2.8 Macro lens. The genitalia figures were taken with a Keyence® BZ-9000 Biorevo Fluorescence Microscope. The processing of all illustrations was 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 holotype 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 №№

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0161-0162–2018). These letter and digit codes correspond to the numbering system of the figured specimens in the first 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 № OG–028-2018) is pinned under the specimen and is listed in the archives of the first author.

The holotype of the new species is deposited in the collection of National Museum of Nature and Science, Tsukuba (formerly Natural Science Museum Tokyo), Japan (NSMT).

Taxonomic account

Nokona onoderai Gorbunov et Arita **sp.n.**
Figs 1–3.

MATERIAL. **Holotype** ♀ (Figs 1, 2) with labels: "Vietnam: / Ninh Binh Prov., Gia Vien, / Cuc Phuong National Park / 1.VI.2016 / Shingo Onodera legit"; "SESIIDAE / Pictures №№ / 0161-0162–2018 / Photo by O. Gorbunov"; "Genitalia examined / by O. Gorbunov / Preparation № / OG–028-2018"; "HOLOTYPUS ♀ / *Nokona onoderai* / O. Gorbunov et Arita, 2020 / O. Gorbunov des., 2018" (NSMT).

DESCRIPTION. **Female** (holotype) (Figs 1–2). Alar expanse 31.1 mm; body length 19.0 mm; forewing 13.8 mm; antenna 8.1 mm.

Head with antenna dark brown to black with dark blue-violet sheen dorsally and light brown ventrally; scapus gray with purple-bronze sheen and a few white scales ventrally; frons gray with purple-bronze sheen and a narrow white stripe laterally; vertex black with anthracite sheen; labial palpus exterior-dorsally dark gray to black with blue-purple sheen and yellow interior-ventrally; pericephalic hairs yellow dorsally and pale yellow laterally.

Thorax with patagia dark brown to black with greenish-violet sheen; tegula and mesothorax dark brown to black with violet sheen, but densely covered with brick-red to dark orange scales masking background colouration; metathorax dark brown to black with dark violet sheen and a narrow yellow to dark yellow stripe distally; thorax laterally dark grey with greenish-violet sheen and a very narrow yellow spot anteriorly at patagia; posteriorly both metepimeron and metameron dark gray with purple-bronze sheen covered with long white hairs. Legs with neck plate yellow to pale yellow; fore coxa pale yellow to yellow anteriorly and dark brown to black with greenish-violet sheen posteriorly; fore femur dark brown to black with purple sheen and a raw of elongate scales posteriorly; fore tibia dark brown to black with greenish sheen and a raw of elongate scales posteriorly; fore tarsus yellow with an admixture of black scales with greenish sheen dorsally on basal tarsomere; mid coxa dark brown to black with greenish-violet sheen and a few pale yellow scales externally; mid femur dark gray-brown with greenish-bronze sheen with pale yellow posterior margin and a small yellow spot exterior-basally; mid tibia dark brown to black with blue-violet sheen, with an oblique yellow stripe exterior-basally and yellow-orange scales distally; spurs pale yellow with an admixture of gray scales externally; mid tarsus dark brown to black with greenish-violet sheen dorsally and yellow ventrally; hind coxa pale yellow to yellow with a few dark gray scales posteriorly; hind femur dark gray-brown with greenish-bronze sheen, with pale yellow posterior margin and a small yellow spot exterior-basally; hind tibia yellow with an admixture of black scales and with a narrow longitudinal black stripe with bronze sheen exterior-distally; spurs pale yellow with an admixture of gray scales externally; basal hind tarsomere yellow both interior-ventrally and distally and dark brown to black with violet sheen exterior-dorsally; two distal tarsomeres entirely dark brown to black with greenish sheen; remaining tarsomeres dark brown to black with greenish sheen exterior-dorsally and yellow interior-ventrally. Forewing dorsally orange to dark orange posteriorly at base; all opaque parts black with dark purple-violet sheen, some scales within anterior transparent area and somewhat distally of cross-vein with bright electric-blue lustre; transparent areas poorly developed; external transparent area undeveloped; both anterior and posterior transparent area small, covered with translucent scales with bright electric-blue lustre; ventrally opaque parts dark brown to black with dark purple and blight electric-blue lustre and an admixture of individual brick-red scales; cilia dark brown with bronze sheen. Hindwing transparent; veins, discal spot and outer margin dark brown to black with dark violet sheen, anally orange to dark orange; discal spot broad with parallel margins, reaching to vein M_3; outer margin rather broad, about thrice broader than cilia; cilia dark brown with bronze sheen.

Abdomen dorsally dark brown to black with dark violet sheen; tergite 2 with a few dark yellow scales distally; tergite 4 with an extremely broad dark yellow stripe distally; ventrally dark brown to black with dark blue-violet sheen; sternite 1+2 with a few dark yellow scales distally; sternite 4 dark yellow with an admixture of individual dark brown scales anteriorly; anal tuft small dark brown to black with dark violet sheen and an admixture of individual, hair-like, yellow scales anterior-dorsally.

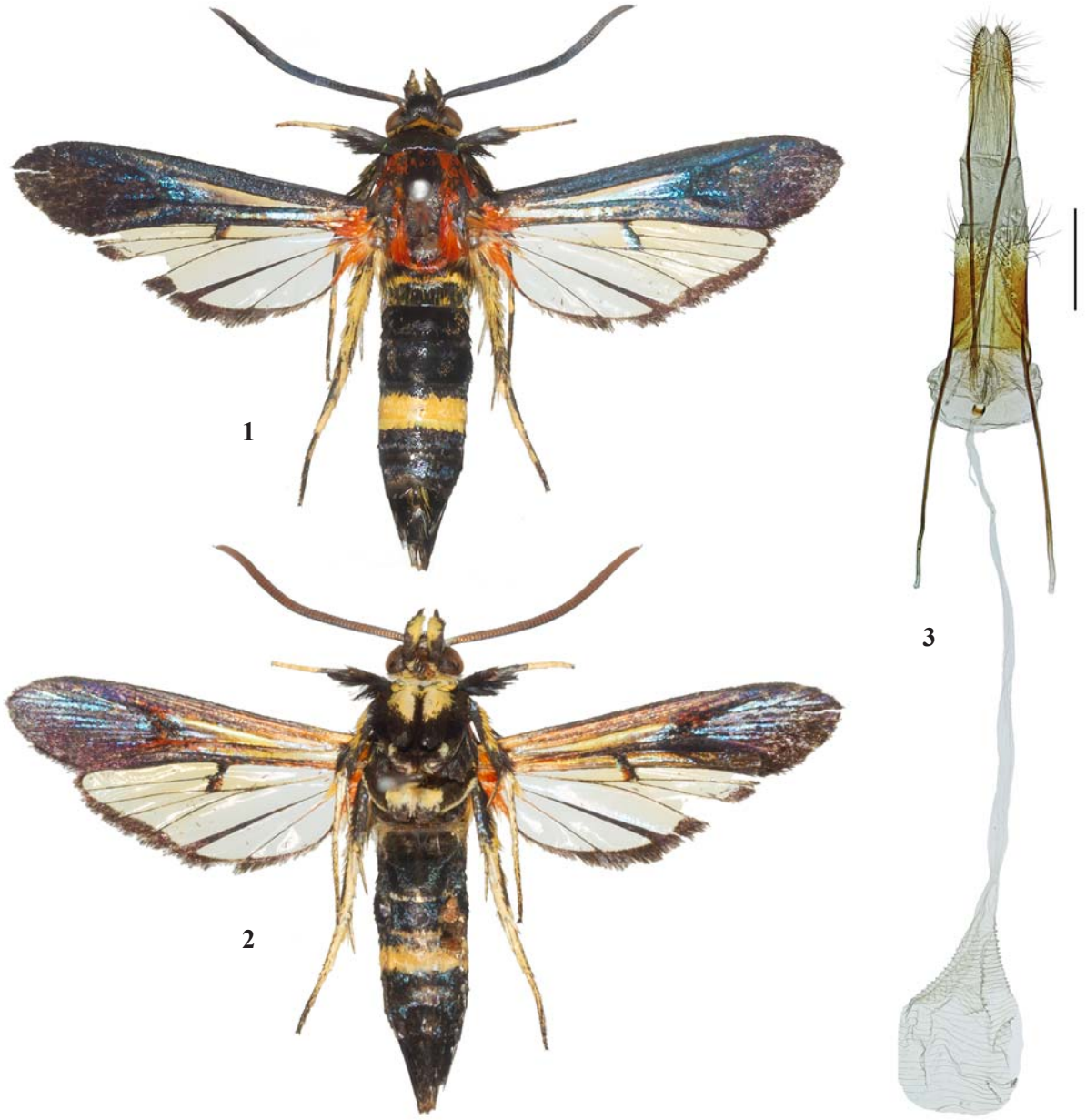
Female genitalia (holotype) (genital preparation № OG–028-2018) (Fig. 3). Papilla analis relatively narrow, well-sclerotized medially, with long setae; posterior apophyses long, about 1.2 times as long as anterior apophyses; anterior apophyses with a narrow long projection, curved caudally; tergite 8 rather broad and long, about 0.4 times longer than anterior apophyses, well sclerotized, with long setae ventrally and distally; ostium bursae opening slightly cranially of anterior margin of tergite 8, narrow, membranous; antrum short, membranous, with a narrow, well-sclerotized semi ring; ductus bursae membranous, thin, long, about twice as long as anterior apophyses; corpus bursae elongate-ovoid, with distinctly wrinkled surface.

Male. Unknown.

INDIVIDUAL VARIABILITY. Unknown.

DIFFERENTIAL DIAGNOSIS. By the presence of the brick-red scales on the abdomen this new species cannot be confused with any other congeners. From *Adixoa pyromacula* Fischer, 2011 (type locality: "Thailand, Provinz Nakhon Ratchasima, Pak Chong, 400 m, Kulturland, Grenze zu Khao Yai, …" [Fischer, 2011: 207]), *N. onoderai* **sp.n.** can be easily distinguished by the conformation of the forewing [transparent areas well-developed in the species compared, *vs*. transparent areas poorly developed, external transparent area undeveloped in *N. onoderai* **sp.n.**; compare Fig. 1 with fig. 3 in Fischer, 2011: 207]. In addition, these two species differ from each other in the structure of the female genitalia [compare Fig. 3 with fig. 4 in Fischer, 2011: 208].

BIONOMICS. The larval host plant is unknown. The holotype was collected in the beginning of June.



Figs 1–3. *Nokona onoderai* **sp.n.** Holotype, ♀: 1 — upside, Sesiidae picture № 0161–2018, Alar expanse 31.1 mm; 2 — ditto underside, Sesiidae picture № 0162–2018; 3 — genitalia, Genital preparation № OG–028-2018. Scale bar 1.0 mm.

Рис. 1–3. *Nokona onoderai* **sp.n.** Голотип, ♀: 1 — сверху. Sesiidae снимок № 0161–2018, размах крыльев 31.1 мм; 2 — снизу, Sesiidae снимок № 0162–2018; 3 — гениталии, препарат гениталий № OG–028-2018. Масштаб 1,0 мм.

HABITAT. The holotype was collected by a butterfly net on a bush on the border of the rain forest.

DISTRIBUTION. The new species is known only from the type locality in the Cuc Phuong National Park in North Vietnam.

ETHYMOLOGY. This new species is named after our former student and friend Mr. Shingo Onodera (Nagoya, Japan), who collected not only the holotype of this new species, but also many other clearwing moths.

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