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## A New Species of the Clearwing Moth Genus *Nokona* (Lepidoptera, Sesiidae) from the Ryukyus

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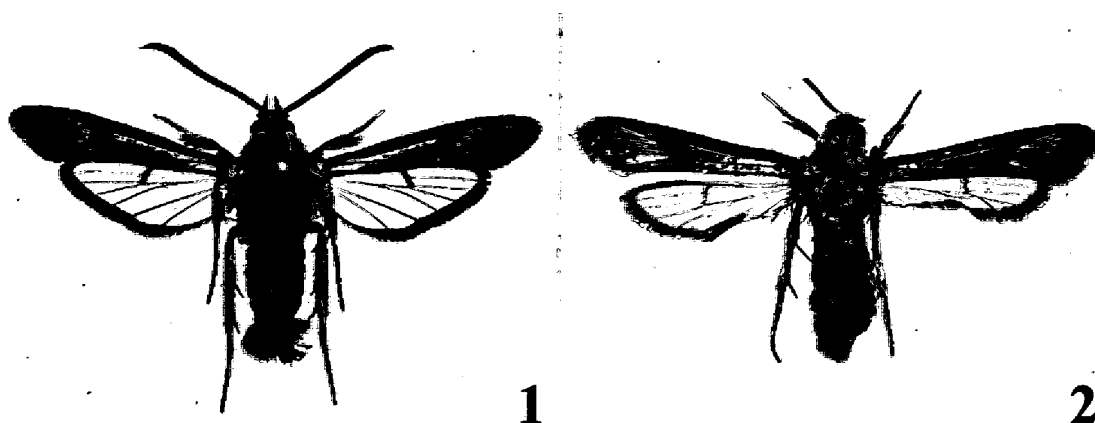
**Abstract** A new species, *Nokona rubra* ARITA et TOŠEVSKI, from the Ryukyus, is described. The status of the genus *Nokona* MATSUMURA, 1931, is discussed, and *Vitacea* ENGELHARDT, 1946, is synonymized with it.

**Key words:** Lepidoptera; Sesiidae; *Vitacea*; *Nokona rubra* ARITA et TOŠEVSKI, sp. nov.; Ryukyus.

There are certain discrepancies of opinions among the authors concerning the status of the genus *Nokona* MATSUMURA, 1931. YANO (1965) placed the type-species of the genus in the genus *Paranthrene* HÜBNER [1819]. Based on the study of the prepupal larvae, MACKAY (1968) treated *Nokona* as a good genus. NAUMANN (1971) also considered *Nokona* to be a good genus, while HEPPNER and DUCKWORTH (1981) cited the genus *Nokona* as a synonym of the genus *Paranthrene*.

The species of the genus *Nokona* differ from those of *Paranthrene* in characteristic genital structures of the male (the distal end of uncus and the apex of valva are more or less spear like, and the dorsal part of the inner surface of valva is covered with large and highly specialized setae) and in characteristic bionomy, the host plants being mostly the species of the genus *Vitis* (Vitaceae). The species of the genus *Paranthrene* are characterized by the rounded distal end of uncus and apical part of valva, and by the dorsal part of the inner surface of valva covered mostly with unspecialized long scale-like hairs, and all those species, bionomies of which are known, are typical xylophages, and their host plants are mostly poplars and willows (Salicaceae).

Based on morphological peculiarities including male and female genitalic characters, as well as on larval morphology (MACKAY, 1968), the genus *Nokona* can be considered heterogeneous. It comprises three different groups of species: 1) the *regalis*-group (anal tuft with a pair of elongate tufts; apical part of valva covered with long scale-like hairs; aedoeagus as long as or longer than valva); 2) the *bicincta*-group (inner side of the dorsal part of valva covered with specialized setae reaching



Figs. 1-2. *Nokona rubra* ARITA et TOŠEVSKI sp. nov. — 1, Holotype, male; 2, paratype, female.

the apex of valva; aedoeagus considerably shorter than the length of valva); 3) the *feralis*-group (female genitalia with specialized lamela antevaginalis). The male genitalia of each of the groups are more or less homogeneous, in contrast with those of the females which show considerable differences between the species. The same characteristics appear in the North American genus *Vitacea* ENGELHARDT, 1946, which is, in our opinion, a synonym of the genus *Nokona*.

On the basis of what was stated above, the genus *Nokona* would be treated as follows:

*Nokona* MATSUMURA, 1931

Type species: *Paranthrene* (*Nokona*) *yezonica* MATSUMURA, 1931 (= *Sciapteron regale* BUTLER, 1878).

Synonym: *Vitacea* ENGELHARDT, 1946, syn. nov. Type species: *Aegeria polistiformis* HARRIS, 1854.

In the fauna of Japan the following species of this genus are recognized:

*Nokona regalis* (BUTLER, 1878), comb. rev.

*Nokona purpurea* (YANO, 1965), comb. rev.

*Nokona feralis* (LEECH, 1889), comb. nov.

*Nokona pernix* (LEECH, 1889), comb. nov.

*Nokona rubra* ARITA et TOŠEVSKI, sp. nov.

*Nokona rubra* ARITA et TOŠEVSKI, sp. nov.

(Figs. 1-3)

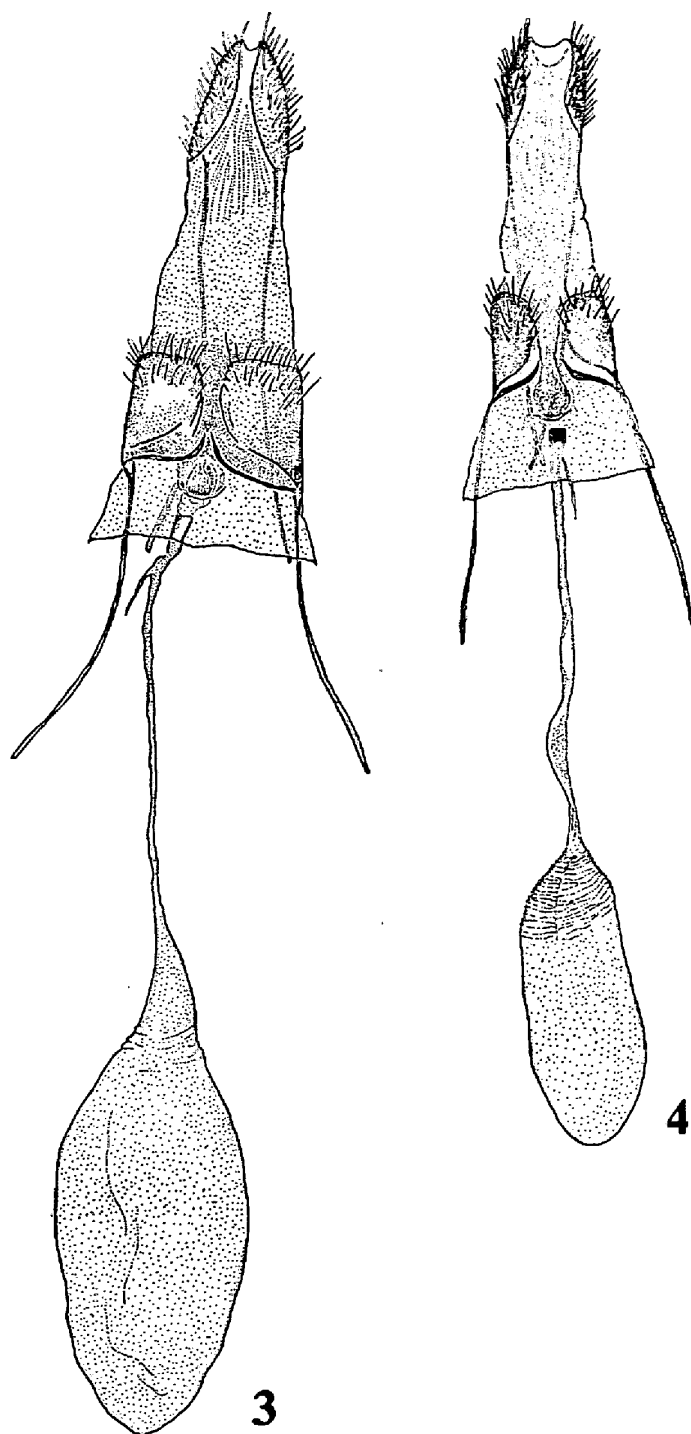
Material: Holotype: ♂, Japan, Ryukyus, Amami-Oshima Is., Ukenson, Akatsuchiyama, 14. VI. 1978, Y. ARITA leg. Paratypes: 1 ♀, Okinawa Is., Shimashi, 1. VII. 1973, M. NAGAHAMA leg., in coll. TOŠEVSKI; 1 ♀, Okinawa Is., Shuri, 18. VI. 1970, M. KINJO leg., genitalia on slide no. 1363 Y.A. Holotype is preserved in the collection of the Zoological Laboratory, Meijo University.

*Male* (Fig. 1). Alar expanse 31.0 mm. Antenna dorsally black, ventrally reddish brown. Labial palpi black, 2nd and 3rd segments ventrally orange, dorsally covered with numerous orange scales at the front part. Forehead black, with a yellow stripe above the eyes. Vertex black, covered with many orange scales at the front part. Postorbital space between vertex and the neck covered with yellow protruding hairs. Thorax black; tegula golden yellow in the first two thirds. Mesothorax black, golden yellow along the sides. Metathorax black with long pale yellow hairs. Pleura black, with some yellow spots at the frontal part and underneath the wing. Fore-leg: coxa and femur black; tibia proximally black, distally covered with golden yellow scales. Hind-leg: coxa and femur black, covered with golden yellow scales in the area of articulation; tibia black in proximal half, distal part and inner side golden yellow with black ring in the area of the hind spurs; tarsus golden yellow with many black scales. Forewing orange red with distinctly indicated veins covered with black scales; costa black, diffusely covered with orange red scales; in basal quarter, area between costa and radial vein homogeneously covered with orange red scales; anterior transparent area covered with orange red scales, narrow longitudinal transparent stripe along the frontal edge; posterior transparent area homogeneous orange red, transparent only at the wing base; external transparent area and apical area covered with pale brown reddish scales; fringe dark brown; ventral side orange red; veins in external transparent area and apical part black. Hindwing transparent; discal spot brown, with sparse pale scales; terminal edge broadly brown; fringe dark brown. Abdomen black; distal half of 2nd and 4th tergites golden yellow; distal edges of 5th and 6th and sides of the 7th tergites narrowly golden yellow; anal tuft yellow at the side, black in the middle; distal half of 4th sternite golden yellow; distal edges of 3rd and 5th sternites golden yellow only at the middle; anal tuft black, golden yellow along sides.

*Female* (Fig. 2). Similar to the male, but differs as follows: wings pale orange yellow; distal half of 4th abdominal tergite broadly golden yellow; the distal edges of 2nd, 5th and 6th tergites narrowly yellow; anal tuft orange with black stripe in the middle.

*Female genitalia* (Fig. 3). Sclerotized stripes of 8th sternite narrow, slightly banded distally. Ostium membranous, funnel-shaped. Antrum extended, ring-shaped, slightly sclerotized. Ductus bursae membranous. Corpus bursae ovally extended, without signum; single slightly visible wrinkle at the entry of the ductus into the corpus bursae.

*Diagnosis.* *Nokona rubra* sp. nov. most closely resembles *N. pernix* (LEECH, 1889). The forewing of *N. pernix* is reddish brown, and the thorax and tegulae are black; the distal edges of 2nd, 4th, 6th and 7th abdominal tergites of the male are narrowly yellow, and those of 2nd and 4th are widely yellow and that of the 6th is narrowly yellow in the female; the male anal tuft is black with white margin along the side; the female anal tuft is black with two yellow stripes along sides.



Figs. 3-4. *Nokana* spp., female genitalia. — 3, *N. rubra* ARITA et TošEVSKI sp. nov., paratype, Okinawa Is., Shuri, 18. VI. 1970, slide No. 1363 YA; 4, *N. pernix* (LEECH, 1889), Aichi-ken, Nagoya, Yagoto, slide No. 541, I. TošEVSKI.

The forewing of *N. rubra* sp. nov. is orange red, the thorax is black, and the first two thirds of tegula is golden yellow; the distal edges of 2nd and 4th male tergites are widely golden yellow, and those of the 5th and 6th and the sides of 7th tergite are narrowly golden yellow; the male anal tuft is yellow at the side and black in the middle; in the female the distal part of 4th tergite is broadly golden yellow, the distal edges of the 2nd, 5th and 6th tergites are narrowly golden yellow, and the anal tuft is orange with black stripe at the middle. The differences in the female genital structure are significant. In *N. pernix* the lobi of the 8th sternite are narrower, the antrum is shorter, of rather sclerotized ring, and the corpus bursae has distinct wrinkles in the caudal third (Fig. 4). In *N. rubra* sp. nov. the lobi of 8th sternite are almost squarish and rather developed, the antrum is extended and slightly sclerotized, and the bursa copulatrix has a few wrinkles at the juncture of the ductus and corpus bursae.

*Bionomy and habitat.* The host plant is unknown. The type-series was collected in mid June to early July along footpaths in woodlands.

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