



A new species of the shore-fly genus *Notiphila* Fallén, 1810 (Diptera: Ephydriidae) from Indonesia

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Abstract

A new shore-fly species, *Notiphila oksanae* sp.n. from Indonesia is described. The new species is similar to the Oriental species *Notiphila thaica* Krivosheina, 2010 in having many brown stripes on the thorax and in presurstyli broad in lateral view, but differs in 2 facial setae of subequal length, the absence of brown band on anepisternum and the presence of dark band on hind tibia. A key to the presently known Australasian/Oceanian species of the genus *Notiphila* Fallén, 1810 is given.

Key words: Diptera, Ephydriidae, *Notiphila*, Australasian/Oceanian, new species, description, key

Introduction

Notiphila Fallén, 1810 is one of the most species-rich, shore-fly genera (Diptera, Ephydriidae), comprising over 130 species worldwide. Within this species diversity, nearly 40 have been recorded from the Nearctic, 32 from the Palaearctic, 26 from the Afrotropical, 14 from the Neotropical, 19 from the Oriental and 4 from the Australasian/Oceanian Regions (Bock, 1988; Cogan, 1968; Krivosheina, 1998, 1999, 2001, 2003, 2010; Mathis, 1979; Mathis & Zatwarnicki, 1995).

Adults of *Notiphila* can be easily distinguished from those of other genera of Ephydriidae by the narrowed mouth opening, the structure of the wing (costal vein extended only to vein R_{4+5}), and the grey-brown body. The mode of life of *Notiphila* species is typical for shore flies: adults occur in mass in the shore zone of water bodies, slowly moving over the humid silt substrate or over parts of plants floating on the water surface; they can frequently be observed seating on stems head first. Larvae inhabit the rhizosphere, feed on detritus, breathe with oxygen of plant tissues, periodically piercing roots with a tapered spiniform spiracles (Krivosheina, 1993).

A new species of the genus *Notiphila* was found in the material collected by N. Vikhrev and O. Eremenko in Indonesia; its description is given below.

Material and methods

The descriptive terminology follows that used by Mathis & Zatwarnicki (2007). Dissections of male genitalia were performed using the method of the same authors with some exceptions: microforceps were used to remove the posterior end of the male abdomen, which was macerated in a potassium or sodium hydroxide solution. Cleared structures were rinsed in distilled water and then in 70% ethanol. Figures were made from genitalia placed to glycerin. The rest of the abdomen and genital structures were placed in a plastic microvial filled with glycerin and attached to the pin supporting the insect from which it was removed. For freshly caught specimen we used advice from Mathis & Zatwarnicki (2007) and teased open the epandrium and attached structures, thus allowing its examination and identification of the species

without dissection. This method allowed us to keep the holotype specimen intact, although paratype male specimen was prepared in order to make accurate complete description and figures.

The holotype and paratypes of the new species are deposited in the collection of the Zoological Museum of Moscow State University (ZMUM).

Taxonomic part

Notiphila (Notiphila) oksanae Krivosheina et Ozerov, sp.n.

Figs 1–3.

Material. Holotype ♂, Indonesia, W Papua, Merauke env. (8.52S 140.65E), 9–15.XII.2014 (N. Vikhrev, O. Eremenko). Paratypes: 1 ♂, 1 ♀, the same label data.

Diagnosis. In having many longitudinal, thoracic stripes and dilated surstyli in lateral view, this new species resembles the Oriental species *Notiphila (N.) thaica* Krivosheina, 2010, but differs in having 2 subequal facial setae, the absence of a brown band on anepisternum and the presence of a dark band on hind tibia. By the structure of genitalia (basally fused presurstyli, long aedeagus and large phallapodeme) the new species is closer to *Notiphila (N.) insularis* Grimshaw, 1901, occurring both in Oriental and Australasian/Oceanian Regions, differing from it in having striate body coloration (body grey with dark spots at bases of setae in *N. (N.) insularis*).

Description. Body medium-sized, length 3.5–3.8 mm in males, 4.0 mm in females, wing 3.5 mm. General coloration grey with blackish brown stripes and spots.

Head. Frons dark grey, fronto-orbital plate and ocellar triangle pale, with dark points at bases of setae and in female with additional narrow longitudinal dark grey spot in front of anterior ocellus. Face golden, carina dark brown, parafacial golden. Palpus yellow. Antenna yellow, 1st flagellomere darkened dorsally. Arista with 11 long rays. One strong posterior fronto-orbital seta pointing posteriorly; 1 fine, very short anterior fronto-orbital seta pointed anteriorly. Postfrontal index (height to width ratio of frons) 0.8, prefrontal index (ratio of height of face to its width below antennae) 1.5, head index (eye to gena height ratio) 7:1. Face with 2 strong subequal setae and 1 or 2 fine short hairs below setae.

Thorax. Scutum grey, with dark spots at bases of all setae, with blackish brown medial stripe bifurcating near scutellum; similar stripes running along line intra-alar setae behind suture, besides large elongate spots present around supra-alar setae and anterior notopleural seta; anepisternum grey with median dark spot, katapisternum grey. Scutellum grey, ventral surface shining black with grey stripe between apical setae. Scutellum oblong, 1.2 times as long as wide, covered with sparse short hairs, with 4 long setae. Halteres yellow. All coxae dark, densely grey microtomentose; femora dark with yellow apices; fore tibia yellow basally and darkened in apical half; mid tibia yellow; hind tibia yellow with narrow dark band at apical half. Fore tarsus black, mid and hind tarsi yellow. Fore femur posteroventrally with 3–5 long setae. Mid femur with 2–3 strong long spiniform setae on inner surface, this row also including 2–3 short setae; anteroventral and posteroventral surfaces with rows of short spiniform setae in apical half. Mid tibia with 3 strong dorsal setae. Wing blackish.

Abdomen. Grey; tergite 1 with 2 medial dark spots; tergites 2–4 with four spots, and tergite 5 with 2 similar spots. In females spots on segments 2–3 fused. Spots arranged to form narrow, pale grey longitudinal stripe in medial part of abdomen. Posterior margins of tergites with posterior marginal setae. Male terminalia: epandrium in dorsal view oval, presurstyli fused basally and pointed apically with group of relatively strong setae, cercus relatively large and covered with setae (Fig. 1); epandrium and presurstylus in lateral view not angulate, presurstylus broad and rounded apically with irregular rows of setae (Fig. 2); subepandrial plate in lateral view rod-like with broadened end (Fig. 3); aedeagus large and tubular, of same width basally and apically, with dorsobasal short slightly curved process; phallapodeme large, longer than aedeagus, significantly expanded, extension to base of aedeagus elongate (Fig. 3); gonite angulate, T-shaped, with 2 apical setae; hypandrium in dorsal view broadly U-shaped, lateral arms curved laterally.

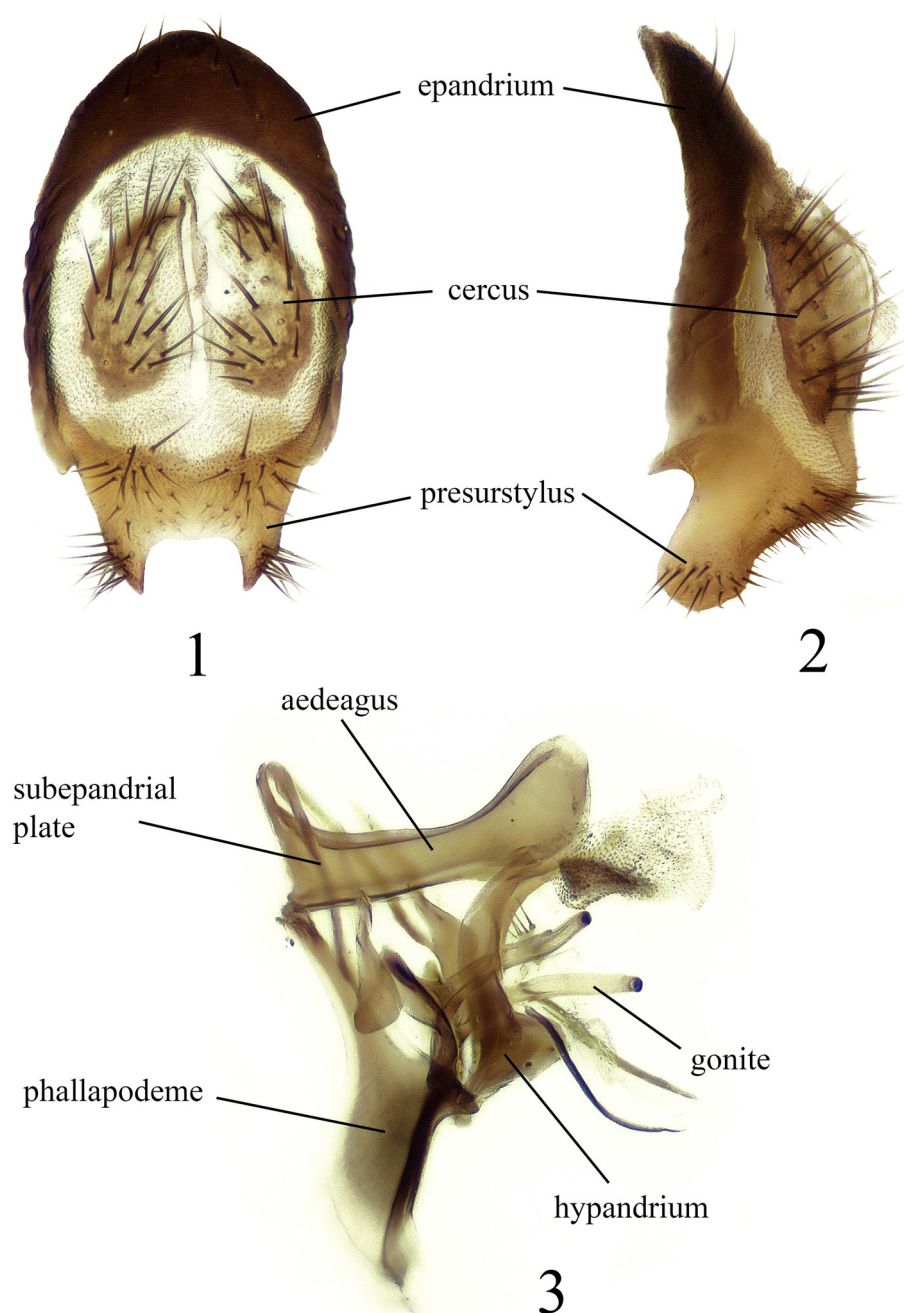
Biology. The specimens were collected from leaves and stems of plants growing in a small pond.

Etymology. *Notiphila oksanae* sp. n. is named after Oksana Eremenko (Kharkov, Ukraine), the collector of the material from W Papua and a volunteer at Zoological Museum of Moscow University.

Key to the Australasian/Oceanian species of *Notiphila* (males)

1. Face without strong facial setae, with fine hairs only. Australia (New South Wales, Tasmania).....

- *N. (Agrolimna) bicornuta* Bock, 1988
- Face with strong facial setae 2
 - 2. Face with 3 facial setae 3
 - Face with 2 facial setae 4
 - 3. Gena low, eye to gena height ratio about 5:1. Face silvery-grey. Hawaiian Islands (Hawaii, Kauai, Molokai, Oahu), Ryukyu Islands, Taiwan *N. (Notiphila) insularis* Grimshaw, 1901
 - Gena higher, eye to gena height ratio about 3:1. Face golden-tan. Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria, Western Australia) *N. (Notiphila) fuscimana* Malloch, 1925
 - 4. Gena low, eye to gena height ratio about 7:1. Thorax grey with brown stripes. Male abdomen with four distinct dark spots on tergites 3–4. Indonesia (W Papua, Merauke) *N. (Notiphila) oksanae* **sp.n.**
 - Gena high, eye to gena height ratio about 3:1. Thorax grey. Male abdomen without distinct dark spots on tergites 3–4. Australia (Northern Territory, Queensland); India, Indonesia (Java), Nepal, Philippines, Taiwan, Thailand *N. (Notiphila) impunctata* de Meijere, 1908



FIGURES 1–3. *Notiphila (Notiphila) oksanae* **sp.n.** 1—epandrium, cerci and presurstyli, dorsal view; 2—same, lateral view; 3—internal structures of the male terminalia, lateral view.

Discussion

Notiphila is one of the most investigated genera among Ephydriidae. The revisions of the Afrotropical (Cogan, 1968), Australian (Bock, 1988), Nearctic (Mathis, 1979), Palaearctic (Krivosheina, 1998) and Oriental faunas (Krivosheina, 2001) have been completed. However not all "old" primary types of the genus were found and investigated, resulting in some new discoveries, such as the syntypes of *Notiphila meridionalis* (Rondani, 1856) belonging to the genus *Brachydeutera* Loew, 1863 (Stuke, 2011). The fauna of the Australasian/Oceanian Region comprises four species: *N. (Agrolimna) bicornuta* Bock, 1988, *N. (Notiphila) insularis* Grimshaw, 1901, *N. (Notiphila) fuscimana* Malloch, 1925 and *N. (Notiphila) impunctata* de Meijere, 1908. Luckily genitalia of all abovementioned species were illustrated (Bock, 1988; Krivosheina, 2003). Recently no species of the genus *Notiphila* were reported from the region (Mathis & Zatwarnicki, 1995), although we think that the revision of *Notiphila* collections could change the situation significantly. The new species described herein undoubtedly differs from all known species of *Notiphila* by structures of genitalia and the number of the regional species is thus increased to five.

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