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RESEARCH ARTICLE

New species of Neriidae (Diptera: Schizophora): an addition to the previously monotypic genus *Protonerius*

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ABSTRACT. In recent years, our knowledge of the Oriental fauna of Neriidae has improved with the studies of *Telostylus* Bigot, 1859 and *Teloneria* Aczél, 1954. However, the small genera (less than three species) have never been revised and their taxonomy remains obscure. Neriidae has 18 genera of which 10 occur exclusively in the Oriental and Australasian Regions, including four monotypic genera, of which one, *Protonerius* de Meijere, 1924, is only known from the female holotype of *Protonerius guttipennis* de Meijere, 1921 from Indonesia. We here describe a second species of the genus, *Protonerius opacus* **sp. nov.**, based on a female specimen from Selangor, Malaysia, which differs from the type species of the genus by the patterns of infuscate spots on the wing and the coloring of pleuron and femora. Additionally, an identification key for the two species and an updated diagnosis of the genus are provided.

KEY WORDS. Banana-stalk flies, cactus flies, Nerioidea, taxonomy.

INTRODUCTION

The neriids from the Neotropical and Afrotropical Regions constitute a monophyletic lineage. The Neotropical fauna is the best-known group within Neriidae. In contrast, the Oriental lineages remain poorly known and their phylogenetic relationships remain obscure (Koch et al. 2015). Of the 18 genera of Neriidae, 10 are distributed in the Oriental and Australasian Regions. From these, four are monotypic and three are exclusively known from the Oriental Region (Steyskal 1977).

Recent studies have dealt with the taxonomy of two Oriental genera, *Telostylus* Bigot, 1859 and *Teloneria* Aczél, 1954 (Sepúlveda et al. 2019, 2020). Less diverse genera (less than three species), such as *Indonesicesa* Koçak & Kemal, 2009, *Gymnonerius* Hendel, 1913, *Nipponerius* Cresson, 1926, and *Stypocladius* Enderlein, 1922, although relatively common in collections, have never been revised. Only *Protonerius* de Meijere, 1924, remains a mystery due to the lack of material in collections and any other available information beyond the original description.

Protonerius was originally described as a subgenus of *Paranerius* to include the species *Paranerius* (*Protonerius*) *guttipennis* (de Meijere, 1921), for which no new taxonomic information has been published since its original description (de Meijere 1921, 1924, Steyskal 1977). According to de Meijere (1924), the presence of four postsutural dorsocentral setae of *Paranerius* (*P.*) *guttipennis* fulfilled the necessary requirements to describe a new group for the species, since the other species of *Paranerius* have only two postsutural dorsocentral setae. Hennig (1937) did not include any additional information on the species in his revision of the family and stated that, despite knowing *Paranerius* and *Protonerius* only from their original descriptions, it was unlikely that the genera were related. Hennig's opinion was first formalized in the list of zoological species provided by Neave (1940) and subsequently by Steyskal (1977), who listed *Protonerius* as an independent genus in the catalogue of the Oriental Neriidae. Herein we describe a second species, *Protonerius opacus* sp. nov., from a female specimen collected in Selangor, Malaysia.

MATERIAL AND METHODS

This study is based on material from the following institutions: (NHMUK) Natural History Museum, London, United Kingdom; (ZMAN) Universiteit van Amsterdam, Institut voor Taxonomische Zoologie, Zoologisch Museum, Amsterdam, Netherlands.

The specimen of the new species is deposited at NHMUK. The type material of *Protonerius guttipenis* deposited at ZMAN was examined only through photographs. The total length of the

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new species was measured from the parafacial to the posterior margin of tergite 6. The terminology used in the description of the new species follows Cumming and Wood (2017).

Photographs were made using a Leica DFC 500 digital camera mounted on a Leica MZ16 stereoscope and images were edited with the computer software Leica LAS 3D Viewer and LAS Montage ver. 4.7. Illustrations were made using a drawing tube and vectorized using ©Adobe Illustrator CS6(2020).

TAXONOMY

Protonerius de Meijere

Type-species: *Paranerius* (*Protonerius*) *guttipennis* de Meijere, 1921: 29 (by monotypy), ♀, holotype [ZMAN]. Type locality: Indonesia, Sumatra, Talamau Mountain.

de Meijere 1924: 29 (description as subgenus of *Paranerius*); Hennig 1937: 245 (notes), 268 (notes); Neave 1940: 943 (listed as a genus); Steyskal 1977: 9 (catalogue).

Diagnosis. Arista white pubescent, placed subapically on dorsal margin of first flagellomere. Pedicel with distal margin convex on outer margin, dorsally; inner process of pedicel triangular and positioned dorsally. Antennal base swollen and shiny. Occiput swollen and shiny, with patch of unordered setae. Body setae very long, including five dorsocentral setae, being one presutural and four equally spaced postsutural setae, two notopleural setae and discal scutellar seta. Scapular seta and humeral setae present. Infuscate wings with two setae on basicosta.

Distribution. Malaysia (Selangor), Indonesia (Sumatra).

Key for the species of *Protonerius*

1. Wing infuscate on distal third and around veins r-m and dm-cu, with a hyaline median spot on cell r_{4+5} (Figs 1, 2). First flagellomere ovoid (Fig. 5). Femora entirely brown. Pleuron with slightly and homogeneously distributed pruinescence.....*P. opacus* (Figs 1–7)

1'. Wing infuscate from base to apex, with circular hyaline spots. First flagellomere rounded. Femora brown with yellow apex. Pleuron with rounded patches of dense pruinescence ..... *P. guttipennis* (Figs 8, 9)

Protonerius opacus sp. nov.

Figs 1–9

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Diagnosis. Wing infuscate on distal third and around veins r-m and dm-cu, with a hyaline median spot on cell r_{4+5} (Figs 1, 2). First flagellomere ovoid (Fig. 5). Femora entirely brown. Pleuron with slightly and homogeneously distributed pruinescence.

Description. Female (holotype). Body length 6.5 mm. Wing length 5.8 mm, width 1.8 mm.

Head. First flagellomere ovoid; pedicel short, length is the same as width; outer surface of pedicel with convex distal margin on dorsal half; distal margin of pedicel with one dorsal and one ventral outstanding setae; scape short, length is the same as width. Antennal base protruding and shiny, inner margin of antennal base dorsally separated by the visible upper face; anterior margin of frons convex; parafacial narrow and brown with median yellow stripe; fronto-orbital plate brown and sub-shiny, with three long and subequal setae; anterior third of fronto-orbital plate slightly protuberant; frontal vitta brown with median yellow V-shaped stripe narrower near ocellar tubercle; vertex brown and long, with postocellar setae separated from ocellar tubercle by twice its longitudinal diameter; inner vertical seta the longest, twice the length of inner vertical seta and one third longer than postocellar seta; occiput brown; postgena horizontally curved under the occiput, with long and black patch of setae; gena narrow and yellow with gray pruinescence; genal seta as long as anterior fronto-orbital seta; vibrissa present.

Thorax. Brown with two dorsal gray pruinose stripes on presutural scutum fading posteriorly; pleuron brown and homogeneously slightly pruinose. Dorsal presutural scutum shorter than posterior scutum; scutellum brown with median dorsal gray pruinescence. Anepisternum with yellow setulae; katepisternum with one lateral seta and one ventral seta as long as anterior dorsocentral presutural seta and several ventral yellow setulae; katatergite rounded and very swollen. Coxae brown; fore coxa with two apical setae; mid coxa with two lateral setae; hind coxa with two lateral setae, ventral seta thiner and shorter. Tegula with one seta. Legs entirely brown; femora without ventral spine-like setae; mid femur with line of anterior median setae.

Abdomen. Entirely brown, sub-shiny and setose. Oviscape brown and sub-shiny; length is twice the width.

Etymology. The name *Protonerius opacus* refers to the mostly dark body, from the Latin word 'opacus' meaning shady, dark, obscure.

Type material. Holotype, female, W. MALAYSIA: Selangor, A.E. Stubbs BMNH 1974-87 / Gentig H'lands, Hotel road, forest, 3000 feet, 25.xii.1972 [NHMUK #2933].

Remarks. Representatives of *Protonerius* are so rarely collected, that the two species known have been exceptionally described from female specimens. The morphology of the two species of *Protonerius* is remarkably different from other genera of Neriidae. Such differences include the number and size of setae, the shape of the distal margin of pedicel and the postgena, but mainly the position of the arista, which is apical in all other genera of Neriidae and slightly dorsal in *Protonerius*.

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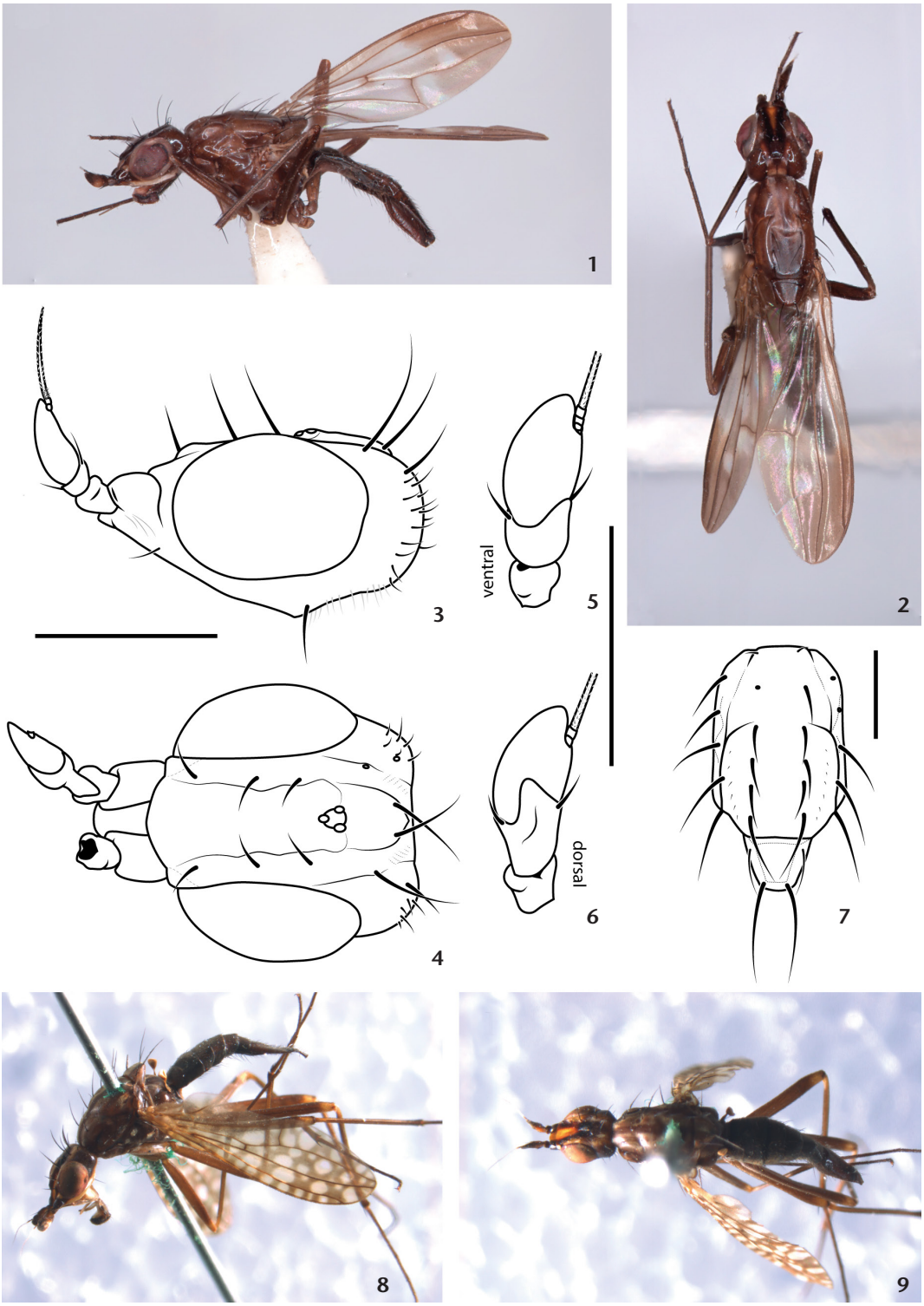

Figures 1–9. Species of *Protonerius*. (1–7) *Protonerius opacus* sp. nov., holotype: (1) habitus lateral; (2) habitus dorsal; (3) head lateral; (4) head dorsal; (5) antenna outer surface; (6) antenna inner surface; (7) thorax dorsal. (8–9) *Protonerius guttipennis*, holotype: (8) habitus lateral; (9) habitus dorsal. Scale bars: 1 mm.

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TAS and LM contributed equally to this article.
Competing Interests
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