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A new species of *Palpomyia* Meigen (Diptera: Ceratopogonidae) described in all life stages from Shillong plateau, India

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Abstract

Life stages of *Palpomyia sohraensis* **sp. n.** is described and illustrated with bio-ecological notes. Key to the adult of the all species from India of the genus *Palpomyia* Meigen is also provided. The complete life stages of any *Palpomyia* are described for the first time from the Oriental Region.

Key words: Predaceous midges, *Palpomyia*, Indian Subcontinent, Life stages, Immature

Introduction

Biting midges of the genus *Palpomyia* Meigen of the tribe Palpomyiini is well distributed in Eastern parts of India. Ten species have been reported (Das Gupta *et al*. 2008) so far from India and 277 species Worldwide (Borkent 2013). Kieffer (1910; 1911; 1912), Tokunaga (1966) and Yu Yi-Xin *et al.* (2005) enlisted and described the genus from India, Myanmar, Taiwan, Micronesia and South china but there are no complete life stages being reported so far from entire Oriental Region. Grogan & Wirth (1979) and Ronderos *et al*. (2004) described larvae of 2 species and pupae of 7 species from Neotropical region. During a collection program of midges in Shillong plateau of North-Eastern India few larvae were procured from a bog of Cherrapunjee. The immatures appears as genus *Palpomyia* under *distincta* group (Grogan & Wirth 1975; Spinelli *et al*. 2009).The larvae of *Palpomyia sohraensis* **sp. n.** are eel like without any proleg and last segment with variable hairs, epipharynx massive with a row of 8 lanceolate, stout, pointed teeth with 6 shorter teeth. Whereas pupa can be separated from those of other by L–1–IV long seta on large tubercles, V–6–IV pore on large tubercle with absence of L–2–IV and V–5–IV. The adult will be easily separable by mid trochanter with 2 long tubercle like projections.

Material and methods

The larvae were collected from a bog near Cherrapunjee, and subjected to rearing in the laboratory. Ecological data were recorded from the collecting site. Each larva was reared separately in vials kept within Environmental Test Chamber (CHM-10S) for obtaining the association of larva, pupa and adult. The immature and imagines were mounted on glass slides following Das Gupta & Wirth (1968). Larva and pupa were also examined by Scanning Electron Microscope [SEM, S5 30] at University Science Instrumentation Centre in University of Burdwan. The general morphological terminology follows Spinelli *et al*. (2009) for adults, Borkent (2012) and Spinelli *et al*. (2013) for pupae, and Spinelli *et al*. (2013) for larvae. The measurements of different parts of immature and adults are in micrometers (µm) except the total length of larvae, pupa and wing length of adults are expressed in millimeter (mm). The measurements are given as ranges with "n" in parentheses denoting the number of specimens observed and mean have been given along with range of all parameters. For Dissolved Oxygen iodometric method was followed after APHA (1998).

Types are presently kept at the Entomology Laboratory of the Department of Zoology, The University of Burdwan, Burdwan and will be deposited in the National Zoological Collections (NZC), Kolkata in due course.

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Key to Indian species of *Palpomyia* Meigen

[Modified after Das Gupta *et al*. (2008)]

*Kieffer types are considered lost, hence types of these species were not seen.

1. Wing membrane pale brown to dark brown 2
- Wing membrane hyaline, with deep and light veins 7
2. Scutum with anteromedial bristles and without tubercle 3
- Scutum without anteromedial bristles and with tubercle 4
3. Male with narrow sternite 9 having a deep caudomedian excavation, hind tibia with a thumb like inwardly curved spur . . . . . *P. crassipalpis* ♂
- Male with broad sternite 9, without caudomedian excavation; hind tibia without a curved spur. . . . . *P. deminutipalpis* ♂
4. Mid and hind femora with dark brown apical band, mid tibia with one apical spine 5
- Mid and hind femora pale, mid tibia without apical spine 6
5. Apical sensory pit of palpal segment 3 without sensillae; TR of hind leg < 2.5, Hind tibial comb with 7 spines . . . . . *P. pseudorivularis* ♀
- Apical sensory pit of palpal segment 3 with two sensillae; TR of hind leg > 2.5, Hind tibial comb with 8 spines . . . . . *P. simplitheca* ♀
6. Inflated forefemur bearing 8–10 ventral spines on entire length . . . . . *P. magna* ♀
- Slender forefemur bearing 3–4 apical spines . . . . . *P. stella* ♂, ♀
7. All femora armed with stout spines. . . . . **P. leucopogon* ♂
- Only fore femora armed with stout spines 8
8. Palpal segment 5 blackish brown; mid trochanter with 2 long tubercle like projection; 19–21 stout spine on fore femur; fore tibial apex forms a flap like process with a long spur and comb; hind tibial comb with 11 spines . . . . ***P. sohraensis* sp. n.** ♂, ♀
- Palpal segment 5 pale; mid trochanter without tubercle like projection; fore tibial apex simple; hind tibial comb with <11 spines. 9
9. Thorax shining read, bearing a pair of mediolateral spinules . . . . . **P. himalayae* ♀
- Thorax either dark brown or black and devoid of spinules. 10
10. Female dark brown with pale halter . . . . . **P. albiditarsis* ♀
- Female black with dark brown halter . . . . . **P. rivularis* ♀

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