

hppt/ urn:lsid:zoobank.org:pub:047E4E3C-74F5-4B30-B64C-7378AB26D99E

A NEW SPECIES OF THE GENUS *ABLABESMYIA* JOHANNSEN FROM THE EASTERN HIMALAYAN FOOTHILLS IN INDIA, WITH A KEY TO INDIAN SPECIES OF THE NOMINOTYPICAL SUBGENUS (DIPTERA, CHIRONOMIDAE, TANYPODINAE)

N. Paul¹⁾, H. Niitsuma²⁾, A. Mazumdar¹*⁾

1) Entomology Laboratory, Department of Zoology, University of Burdwan, Burdwan 713104, West Bengal, India. E-mail: ¹⁾ nilotpolento@gmail.com *Corresponding author, E-mail: *abhijitau@rediffmail.com

2) Department of Biology, Faculty of Education, Shizuoka University, 836 Ôya, Suruga-ku, Shizuoka, 422-8529 Japan. E-mail: edhniit@ipc.shizuoka.ac.jp

Ablabesmyia (Ablabesmyia) fimbripenis **sp. n.** is described and illustrated on the basis of the male imago and pupa collected from the Eastern Himalayan foothills in India. A key to adult males of subgenus *Ablabesmyia* s. str. from India is also provided based on the re-examination of type specimens.

KEY WORDS: Diptera, Tanypodinae, *Ablabesmyia*, key, new species, Himalayan foothills, India.

Н. Паул¹⁾, Х. Ниитсума²⁾, М. Мазумдар¹⁾. Новый вид рода *Ablabesmyia* Johannsen из предгорий Восточных Гималаев в Индии с определительной таблицей индийских видов номинативного подрода (Diptera, Chironomidae, Tanypodinae) // Дальневосточный энтомолог. 2015. N 295. С. 1-7.

Из предгорий Восточных Гималаев в Индии по имаго самца и пупарию описан Ablabesmyia (Ablabesmyia) fimbripenis **sp. n.** На основании изучения ти-

1

повых экземпляров составлена определительная таблица индийских видов номинативного подрода *Ablabesmyia* s. str.

1) Лаборатория энтомологии, департамент зоологии, Университет Бердуэн, Бардхаман, Индия.

2) Департамент биологии, общеобразовательный факультет, Университет Сидзиока, Сидзиока, Япония.

INTRODUCTION

The genus *Ablabesmyia* Johannsen has a nearly worldwide distribution. Up to now, 64 species have been known from around the world (Ashe & O'Connor, 2009, 2012; Niitsuma, 2013) and nine species have been recorded from India. Although four subgenera, *Ablabesmyia* s. str., *Karelia* Roback, *Asayia* Roback and *Sartayia* Roback, are currently recognized in this genus (Murray & Fittkau, 1989; Niitsuma, 2013; Cranston & Epler, 2013), seven of these Indian species belong to the subgenus *Ablabesmyia*: *A. indica* (Kieffer), *A. ornatipes* (Kieffer), *A. pulchripes* (Kieffer), *A. alba* Chaudhuri, Debnath et Nandi, *A. ensiceps* Chaudhuri, Debnath et Nandi, *A. maculitibialis* Chaudhuri, Debnath et Nandi and *A. transversa* Chaudhuri, Debnath et Nandi.

During the course of taxonomic studies on Indian Chironomidae, we collected one pupa and two male imagoes of *Ablabesmyia* from a tea plantation in Himalayan foothills. The pupa was successfully raised to the adult stage in the laboratory. A close examination of these specimens has revealed that they belong to the same species of the subgenus *Ablabesmyia* and the species is new to science. Here we describe the male imago and pupa, and give a key to the known males of the subgenus from India based on the type specimens deposited in the National Zoological Collections, Kolkata, India (NZC) and the collection of Entomology Laboratory, Department of Zoology, University of Burdwan, India (BUENT).

MATERIAL AND METHODS

The material was collected from a temporary water pool and its surrounding area in Malbazar Tea Estate, Jalpaiguri District, West Bengal, India. Each specimen was dissected and mounted on a glass with Canada balsam. In this paper, the terminology and abbreviations for general morphology follow Sæther (1980) except for appendages of the aedeagal complex, which are derived from Roback (1971). The type material is presently deposited in BUENT but will be transferred to NZC soon.

TAXONOMY

Ablabesmyia (Ablabesmyia) fimbripenis sp. n. Figs 1–13

TYPE MATERIAL. Holotype: male with pupal exuviae (BUENT 252), **India**: West Bengal, Jalpaiguri, Malbazar Tea Estate (26°85′01″N, 88°75′00″E), 16.IV 2012 (emerged 19.IV 2012), coll. N. Paul. Paratypes: 2 males, same data as holotype.



Figs. 1–9. *Ablabesmyia (Ablabesmyia) fimbripenis* sp. n., adult male. 1 – thorax, dorsal view; 2 – wing; 3 – abdominal segments I–VIII, dorsal view; 4 – cibarial pump, stipes and tentorium; 5 – apex of foretibia; 6 – apex of mid tibia; 7 – apex of hind tibia; 8 – male hypopygium, dorsal view (left side) and ventral view (right side); 9 – aedeagal complex, dorsal view. Abbreviations: AB – aedeagal blade; CP – cibarial pump; DL – dorsal lobe; LF – lateral filaments; LL – lateral lobe; St – stipes; Te – tentorium.

DESCRIPTION. MALE (n = 3) (Figs 1–9). Total length 2.5–2.7 mm.

Coloration. Thorax (Fig. 1) yellow with brown lateral and dark median vittae on scutum; prescutellar area brown. Scutellum pale brown and postnotum dark. Wing (Fig. 2) mottled on membrane and strongly darkened on humeral cross-vein, RM, MCu, and on costal vein and its surrounding areas at apices of R_1 and R_{4+5} . Leg segments white with dark bands; fore and mid femora each with 2 bands medially and subapically, but hind femur only with subapical band; all tibiae each with 3 bands sub-basally, medially and apically. Abdominal tergites I–IV pale yellow, tergites V–VII progressively darker to dark brown tergite VII, and tergite VIII yellow (Fig. 3). Hypopygium brown on gonocoxite.

Head. Temporals 21–24, composed of 15–16 inner verticals, 4–5 outer verticals and 2–3 postorbitals. Eye with dorsomedial extension 82–90 μ m long. Tentorium 128–130 μ m long, 46–50 μ m wide; stipes 90–106 μ m long; and cibarial pump 225–237 μ m long (Fig. 4). Clypeus trapezoid with 32–34 setae. Terminal flagellomere of antenna 73–76 μ m long, 21–24 μ m wide with subapical seta 35–38 μ m long; AR 1.06–1.11. Lengths of palpomeres 1–5 (μ m): 46–49, 77–82, 110–116, 95–99, 240–252; CA 0.66–0.69; CP 0.80–0.81.

Thorax. Antepronotum with 7–8 lateral setae. Acrostichals 40–42, anteriorly biserial, posteriorly diverging around prescutellar area; humerals 2–3; dorsocentrals 10, uniserial posteriorly; supraalar 1; prealars 10. Scutellum with anterior group of 12–13 short setae and transverse row of 13–14 long setae.

Wing. Length 1.3–1.4 mm. Membrane with dense macrotrichia. C 1130–1180 μ m long, Sc 594–612 μ m long and M₁₊₂ 850–867 μ m long; Squama with 25–27 setae; brachiolum with 3 setae. VR 0.88.

Legs. Spur on foretibia (Fig. 5) 38–40 μ m long with 5 lateral teeth. Spurs on mid tibia (Fig. 6) 52–57 and 27–32 μ m long with 5 and 4 lateral teeth, respectively. Spurs on hind tibia (Fig. 7) 62–68 and 27–32 μ m long with 2 and 3 lateral teeth, respectively; hind tibial comb consisting of 4 bristles. Lengths and proportions of leg segments in table 1.

	fe	ti	ta ₁	ta ₂	ta ₃	ta ₄	ta ₅	LR	BV	SV
P_1	615-	607-	555-	345-	247–	165-	90–	0.91-	2.03-	2.38-
	637	615	570	367	255	172	110	0.93	2.07	2.40
P ₂	705-	570-	590-	292-	210-	150-	97–	1.02-	2.38-	2.64-
	720	577	600	300	217	165	110	1.05	2.50	2.79
P ₃	600-	697–	675-	360-	263-	172-	105-	0.93-	2.13-	2.34-
	615	720	690	375	272	180	120	0.99	2.21	2.40

Table 1. Lengths (µm) and proportions of leg segments of *Ablabesmyia* (*Ablabesmyia*) *fimbripenis* sp. n., male (n=3).

Hypopygium (Fig. 8). Tergite IX without setae. Gonocoxite 138–145 μ m long, basally swollen and flattened; dorsal lobe curved dorsally, 21–25 μ m long, without setal fringe or brush apically; aedeagal blade nearly straight, tapering toward pointed apex, 32–35 μ m long; lateral lobe lanceolate, 64–68 μ m long; lateral filaments well

developed, $48-52 \ \mu m$ long, with lobe-like basal half fringed outwardly (Fig. 9). Gonostylus 152–165 μm long, with megaseta expanded apically, 25–27 μm long. HR 0.87–0.91.

PUPA (n = 1) (Figs 10–13). Body length of exuviae 3.7 mm.

Coloration. Exuviae generally brown. Wing sheath with brown infuscation along margin and veins, except pale apex and M_{1+2} . Abdomen brown; tergites II–VII each with dark transverse bands along anterior and posterior margins, and 2 pairs of dark longitudinal bands medially and laterally.



Figs. 10–13. *Ablabesmyia (Ablabesmyia) fimbripenis* sp. n., pupa. 10 – abdominal segment I, dorsal view; 11 – shagreen on posteromedial part of abdominal tergite IV; 12 – abdominal segment IV with chaetotaxy, dorsal view (left side) and ventral view (right side); 13 – abdominal segments VII–IX, dorsal view.

Cephalothorax. Frontal apotome and thoracic horn broken off; thoracic comb consisting of 10 conical teeth.

Abdomen. Scar on tergite I (Fig. 10) 175 μ m long and 0.72 times as long as segment length along lateral border. Shagreen on tergites I and IX consisting of solitary spinules, but on tergites II–VIII consisting of arched rows of several spinules (Fig. 11). Arrangement of setae on segment IV as in Fig. 12. Segment VII with 4 LS setae placed 0.47, 0.65, 0.80 and 0.95, respectively, from anterior margin; segment VIII with 5 LS setae placed 0.31, 0.50, 0.67, 0.84 and 0.96, respectively (Fig. 13). Anal lobe 345 μ m long, 2.32 times as long as broad, with 2 anal macrosetae located 0.49 and 0.60, respectively, from anterior margin; outer border with many spinules posteriorly. Male genital sac 0.70 times as long as anal lobe.

FEMALE AND LARVA. Unknown.

DIAGNOSTIC CHARACTERS. The adult male may be separated from the related species by the legs with three-banded tibiae, and the aedeagal complex consisting of an apically bare dorsal lobe, a nearly straight aedeagal blade, a lanceolate lateral lobe, and well-developed, outwardly fringed lateral filaments.

ETYMOLOGY. From the Latin *fimbri*- and *penis*, referring to the fringed lateral filaments of the male aedeagal complex.

REMARKS. Roback (1985) divided the subgenus *Ablabesmyia* into five species groups based on the adult and larval features: *A*. (*A*.) *rhamphe* group, *A*. (*A*.) *monilis* group, *A*. (*A*.) *simpsoni* group, *A*. (*A*.) *mallochi* group and *A*. (*A*.) *aspera* group.

We re-examined type specimens of the Indian species belonging to *Ablabesmyia* s. str., the holotypes of A. (A.) *indica*, and A. (A.) *pulchripes*, and the paratype of A. (A.) *transversa* deposited in NZC, and the holotypes of (A) alba, A. (A.) *ensiceps* and A. (A.) *maculitibialis* in deposited BUENT. It was revealed that A. (A.) *indica*, A. (A.) *pulchripes*, A. (A.) *maculitibialis* and A. (A.) *transversa*, as well as A. (A.) *fimbripenis* belong to the *rhamphe* group because of the dorsal lobe without setal fringe or brush apically and the well-developed lateral lobe in the aedeagal complex, although their larval features are unknown. The male of A. (A.) *fimbripenis* differs from those of A. (A.) *indica*, A. (A.) *pulchripes*, A. (A.) *maculitibialis* and A. (A.) *transversa* in the well-developed lateral filaments. Lateral filaments are not evident in those males.

Among the known species of the A. (A.) rhamphe group, the male of A. (A.) fimbripenis is similar to that of North American A. (A.) rhamphe Sublette, 1964, too, in the smooth lateral lobe, but separable from it by the well-developed lateral filaments. According to the original descriptions (q.v.), lateral filaments are not evident in A. (A.) rhamphe.

Further, the reexamination of type material has shown that A. (A.) *alba* belongs to the *simpsoni* group, and A. (A.) *ensiceps* belongs to the *monilis* group. Although A. (A.) *ornatipes* was described based on the female, the male may be distinguished from that of A. (A.) *fimbripenis* by the tibia with four black bands (see Kieffer 1910).

Indian species of *Ablabesmyia* s. str. are easily separable by the following key to males based on the features of aedeagal complex [A. (A.) ornatipes not included in the key].

Key to the males of the subgenus Ablabesmyia s. str. from India

1. Dorsal lobe well developed with setal fringe apically							
- Dorsal lobe without setal fringe or brush apically							
2. Lateral filaments not evident; lateral lobe well developed							
- Lateral filaments well developed; lateral lobe absent							
4. Dorsal lobe absent							
- Dorsal lobe present							

5. Dorsal lobe longer than 2/3 of aedeagal blade	
	udhuri, Debnath et Nandi
- Dorsal lobe shorter than 1/2 of aedeagal blade	
6. Lateral filaments well developed	. A. (A.) fimbripenis n. sp.
- Lateral filaments not evident	
7. Lateral lobe well developed with marginal serration	A. (A.) indica (Kieffer)
- Lateral lobe well developed without marginal serration	1
A	. (A.) pulchripes (Kieffer)

ACKNOWLEDGMENTS

We are deeply thankful to Dr. Nilardi Hazra of Department of Zoology, University of Burdwan for his valuable suggestions. Thanks are due to the stuff of NZC, Kolkata for allowing to examine the type specimens, and also to the Head of Department of Zoology, University of Burdwan for providing research facilities. This study was supported financially by DST, Government of India.

REFERENCES

- Ashe, P. & O'Connor, J.P. 2009. A World Catalogue of Chironomidae (Diptera). Part 1. Buchonomyiinae, Chilenomyiinae, Podonominae, Aphroteniinae, Tanypodinae, Usambaromyiinae, Diamesinae, Prodiamesinae and Telmatogetoninae. Irish Biogeographical Society & National Museum of Ireland, Dublin, 445 pp.
- Ashe, P. & O'Connor, J.P. 2012. Additions and corrections to Part 1 of "A World Catalogue of Chironomidae (Diptera)". *Fauna norvegica*, 31: 125–136.
 Chaudhuri, P.K., Debnath, R.K. & Nandi, S.K. 1983. Tanypodinae midges of the genus
- Chaudhuri, P.K., Debnath, R.K. & Nandi, S.K. 1983. Tanypodinae midges of the genus Ablabesmyia Johannsen (Diptera: Chironomidae) from West Bengal with a note on their seasonal incidence and sex ratios. Journal of Natural History, 17: 901–917.
- Cranston, P.S. & Epler, J.H. 2013. The larvae of Tanypodinae (Diptera: Chironomidae) of the Holarctic Region. Keys and diagnoses. *Insect Systematics & Evolution*, Supplement, 66: 39–136.
- Kieffer, J.J. 1910. Etude sur les Chironomides des Indes Orientales, avec description de quelques nouvelles especes d'Egypte. *Memoirs of the Indian Museum*, 2: 181–242.
- Niitsuma, H. 2013. Revision of the Japanese *Ablabesmyia* (Diptera: Chironomidae: Tanypodinae), with descriptions of three new species. *Zootaxa*, 3664(4): 479–504. DOI:10.11646/zootaxa.3664.4.4
- Roback, S.S. 1971. The adults of the subfamily Tanypodinae (= Pelopiinae) in North America (Diptera: Chironomidae). *Monographs of the Academy of Natural Sciences of Philadelphia*, 17: 1–410.
- Roback, S.S. 1985. The immature chironomids of the eastern United States VI. Pentaneurini genus *Ablabesmyia*. *Proceedings of the Academy of Natural Sciences Philadelphia*, 137(2): 153–212.
- Sæther, O.A. 1980. Glossary of chironomid morphology terminology (Diptera: Chironomidae). *Entomologica scandinavica*, Supplement, 14: 1–51.
- Sublette, J.E. 1964. Chironomidae (Diptera) of Louisiana. I. Systematics and immature stages of some lentic chironomids of west-central Louisiana. *Tulane Studies in Zoology*, 11: 109–150.

7