

A New Species of *Topomyia* (*Suaymyia*) *suchariti* from Thailand
(Diptera: Culicidae)¹

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ABSTRACT. A new species, *Topomyia* (*Suaymyia*) *suchariti*, is described from Thailand. The adult male, male genitalia and pupa are described in detail and illustrations of the male genitalia and pupa are provided. An incomplete description and illustration of a single associated larval skin is also provided.

INTRODUCTION

In a recent study of the Culicidae for a project carried out from 1981 to 1986, "Phylogenic studies on mosquito fauna of Southeast Asia", the authors found an interesting species belonging to the genus *Topomyia* (Miyagi et al., 1986). After finishing comparative studies on the male genitalia, the authors concluded that it is an additional new species of the subgenus *Suaymyia* and is described as *Topomyia* (*Suaymyia*) *suchariti*. This species is dedicated to Dr. Supat Sucharit, Professor of the Department of Medical Entomology, Mahidol University, Bangkok, Thailand for his support and encouragement during the mosquito survey in Thailand. The method of presentation and terminology used in the description follows Belkin (1962) and Harbach and Knight (1980).

Topomyia (*Suaymyia*) *suchariti*
Topomyia (*Suaymyia*) sp. 1 (near *decorabilis*), Miyagi et al., 1986: 188.

MALE. Wing, 3.3 mm. Proboscis, 2.5 mm. Forefemur, 2.8 mm. Medium in size; rather slender, long-legged, dark brown mosquito, with silvery and pale-golden patches on pleura; outstanding vein-scales rather broad on apical 0.5 of wing.

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Head: Broad flat scales cover the head dark, with a compact patch of silvery scales on anterior vertex; pale-golden patch on both sides of head below eye. Erect scales absent; a pair of interocular and several orbital setae present. Clypeus oval and elongate, integument brown, without setae. Maxillary palp brown small, about 0.1 of proboscis; proboscis slender, elongate and slightly swollen at tip; covered with small dark brown scales, without pale-golden scale-patch or line under the proboscis. Pedicel of antenna yellowish brown in color and bare of scales; antenna flagellum pilose, approximately 2.3 mm in length.

Thorax: Integument of scutum and scutellum dark; scutal scales rather thick, narrow and dark; median silvery line formed by two rows of broad roundish scales originates at anterior promontory and extends caudally to approximately the wing roots. Posterior dorsocentral, prescutellar and supraalar scales rather coarse, narrow and dark gray; many supraalar setae present. Dorsocentral setae absent. All 3 lobes of scutellum with 3 or 4 long marginal setae; central lobe covered with a large patch of flat silver scales; side lobes dark, without scales. Anteprenotal lobes with conspicuous silver patches on dorsum, row of prominent setae on anterior side. Postpronotum covered entirely with flat golden scales; 2 setae present on posterior border. Propleuron covered with patch of flat, silver scales and with 2 setae. Postspiracular, sternopleuron, paratergite, prealar lobe, metapleuron, mesepimeron and all coxae covered with dense golden-silverly scales; 2 setae on paratergite.

Legs: All coxae covered with golden-silvery scales; remaining parts of 3 legs covered with small dark brown scales, except for yellowish reflective scales at base and ventral sides of femora. Claws of all legs simple and equal in size; apical part of hindtibia and basal part of hindtarsomere I with a tuft of brownish reflective setae posteroventrally.

Wing: Brown-scaled. Squame scales densely covering veins, plume scales narrow. Scales on apical 0.5 of longitudinal veins rather broad. Cell R₂ about 1.9 length of stem(R₂+3). Vein A ending far beyond fork of Cu. Alula with a row of many fine scales; upper calipter bare. Haltere: Pedicel and capitellum covered with dark brown scales.

Abdomen: Terga I - VII densely covered with small, dark brown scales, except for a border of pale scales. Sterna II-VII entirely covered by flat, pale gold scales. Tergum and sternum VIII of the specimen destroyed.

MALE GENITALIA (Fig. 1). As figured. Gonocoxite length about 1.86 times breadth, ventral surface of gonocoxite with dense setae extending entire length, dorsal side with many short spiniform setae. Gonostylus short, somewhat broad at apex, with 5-7 long hairs and 3-5 short setae on apical margin. Conspicuous stout spines absent on gonostylus. Inner subapical lobe of gonocoxite bears 2 moderately broad round-ended fattened setae

and a tuft of many long recurved setae. Claspette without dorsal lobe. Lobes of tergum IX widely separated, joined by narrow bridge; each lobe attenuated apically, terminating in pointed seta; 4 stout flattened setae on inner apical margin of either side of bridge. Paraproct long, pointed. Phallosome long and prominent.

FEMALE: Unknown.

PUPA (Fig. 1, Table 1). Abdomen, 3.8 mm. Trumpet, 0.36 mm. Paddle, 0.45 mm. Chaetotaxy as in Figure 1 and Table 1. Integument of cephalothorax and abdomen pale yellow. Characterized by 2 well-developed tufts (setae 6, 9-VII) on abdominal segment VII.

Cephalothorax: Trumpet dark yellow, with distinct sculpturing. Index 2.2; pinna about 0.05 of trumpet length, without meatal cleft. Seta 1-C long, conspicuous, 2 branched from base, 8,9-C single. Abdomen: Microtrichia present on abdominal segments II to VIII. Seta 1-I float hair many branched, each further branching and ending as fine hairs; 10-II present or absent; 5-III-V long and barbed; 6-VII 8-9 branched and barbed, 4-VIII single, very long and thin; 9-VIII 19-20 branched and barbed. Paddle uniformly and lightly pigmented, covered with microtracheae; midrib faint; margin serrated, without fringe. Genital lobe large, extending to 0.7 of paddle.

LARVA. A single larval skin associated with the male (holotype) is available, but considerably damaged. The thorax and abdominal segments are rubbed but the following important characters of head and siphon are observable (Fig. 2, Table 2).

Head: Width about 1.1 length. Pigmentation of head yellow to light brown. Integument without spicules. Collar faint; ocular bulge conspicuous. Mental plate with strong median tooth, about 6-8 smaller teeth on either side. Maxilla with articulated unequal horns, one very large, 0.26 mm in length, as long as maxilla; other 2 small, a well-developed bristle borne on inner side just beneath the articulation of horns; a fine bristle on inner side of apical 0.33 maxilla. Maxillary palp as long as, and about twice as wide as, shaft of antenna. Mouthbrushes short, dense and with inner setae serrated apically. Seta 1-C single, as long as 4,6-C, 4-11-C single, 14, 15-C absent. Antenna: Length about 0.24 length of head. All setae single. Seta 1-A very weak. Chaetotaxy of thorax and abdominal segments I and X as in Table 2. Setae 9-13 of metathorax on common callus. Comb scales 6 in a row, individual scales large, pointed and with small fringe at base. Siphon: Long, broad at base and tapering. Integument with spicules evenly distributed. Index (Length/Median width) 0.24; lightly pigmented, pecten teeth absent; 14-15 pairs of ventral tufts, each with 5-7 branches, except most distal 3 single; 11-12 pairs of dorsal tufts, each with 3-7 branches. Anal segment; lightly pigmented, with small spines along distal margin. All setae of segment X conspicuous dark brown.

SPECIMENS EXAMINED. Holotype. Male (No. 835), with slides of associated pupal and larval skins and genitalia, collected as a 4th-instar larva in a bamboo internode at Trak Nong, Chanthaburi, Thailand on December 9, 1983 by I. Miyagi. Holotype will be deposited in the Smithsonian Institution, Washington D.C. 20560, USA.

TAXONOMIC DISCUSSION. *Topomyia suchariti* clearly belongs to the subgenus *Suaymyia*. Tergum IX has elongated lobes that are widely separated by a narrow bridge and claspettes are absent (Thrumman, 1959). The presence of claspette-like structure on either side of tergite IX and a few broad, round-ended setae or rods on the subapical lobe of the gonocoxite relates *To. suchariti* closely with *To. decorabilis* Leicester, 1908 from Malaysia and *To. imitatus* Baisas, 1946 from Mindanao, Philippines. However, the following very distinctive structures present on the gonostylus and gonocoxite of the male genitalia can easily distinguish *To. suchariti* from the latter two species, as well as all other known species of subgenus *Suaymyia*: 1. Gonostylus short, broad at apex, with 5-7 long setae at apical margin but conspicuous stout spine absent. 2. The inner subapical lobe of gonocoxite with 2 long stout, flattened setae and many strong recurved setae. As the immature stages of most species of *Topomyia*, including *To. decorabilis*, are as yet unknown, it is not feasible at this time to point out the distinctive characters of *To. suchariti*. The presence of an articulated horn on the maxilla relates this species to *To. imitatus* (Baisas, 1946) and *To. argenteoventralis* Leicester, 1908 from Malaysia (Brug, 1931; Bonne-Wepster, 1954). However, *To. suchariti* can be distinguished from the above species by the following distinctive characters of the tip of the abdomen: 1. Comb scales 6 in a row. 2. Siphon with 14-15 pairs of ventral tufts each with 5-7 conspicuous branches, and 11-12 pairs of dorsal tufts each with 3-7 branches. 3. Absence of pecten teeth.

This is the third species of the *decorabilis* group, which includes *To. decorabilis* and *To. imitatus*, which is quite different in genital structures from other members of subgenus *Suaymyia* and could be recognized as a new genus as suggested by Edwards (1922).

BIOLOGY. The single larva of *To. suchariti* was found with larvae of *Armigeres* spp. and *Tripteroides aranoioides* in a small amount of water in an erect bamboo internode bored by some beetles. The larva of *To. suchariti* is predacious, as shown in the extreme form and development of the maxillary horn and observed prey on larvae of *Armigeres* and *Tripteroides*. Nothing is known of the biology of the adults.

DISTRIBUTION. Trak Nong (Kao Makok), National Park, Chanthaburi Province, Thailand.

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REFERENCES CITED

- Belkin, J. N. 1962. The mosquitoes of the South Pacific (Dipter, Culicidae). Univ. Calif. Press, Berkeley and Los Angeles. 2 vols., 680 and 412 pp.
- Bonne-Wepster, J. 1954. Synopsis of a hundred common non-anopheline mosquitoes of the Greater and Lesser Sundas, the Moluccas and New Guinea. Spec. Puble. R. trop. Inst. Amsterdam. 111:1-147, illus.
- Brug, S. L. 1931. XXXII. Culiciden der Deutschen Limnologischen Sunda-Expedition. Arch. Hydrobiol., Suppl. -bd. 9, Tropische Binnengewasser 2: 1-42, illus.
- Edwards, F. W. 1922. A synopsis of adult Oriental Culicine (Including Megarhinine and Sabethine) mosquitoes. Indian J. med. Res. 10:430-475.
- Harbach, R. E. and K. L. Knight. 1980. Taxonomists' glossary of mosquito anatomy. Plexus Publishing, Inc. Marlton, New Jersey, 415 pp.
- Miyagi, I., T. Toma, M. Tsukamoto, M. Horio, M. Mogi, T. Okazawa, Y. Tokuyama, S. Sucharit, W. Tumrasvin, C. Khamboonruang and W. Choochote. 1986. New distribution records of mosquitoes from Thailand with a collection list of 1983 - 1984 surveys. Tropical Biomedicine, 3:181-192.
- Thurman, E. B. 1959. A contribution to a revision of the Culicidae of northern Thailand. Univ. Maryland Agr. Expt. Sta. Bull. A-100, 182 pp.

Table 1. Chaetotaxy of the pupa of *Topomyia (Suaymyia) suchariti*.

No.	Seta Cehalo-thorax	Abdomen							
		I	II	III	IV	V	VI	VII	VIII
0	-	-	-	-	-	-	-	-	1
1	2	mult*	1	2,3	2	2	2	1	-
2	1	1	1	1	1	1	1	1	-
3	1	1	1	2	1,2	1	1-3	1,2	-
4	1	2	3	1	1	2,3	1	1	-
5	1,2	4,5	1	1	1	1	1	1	-
6	1	1,2	1	1	1	1	1,2	8,9	-
7	1	1	1	2	1	1,2	1	1	-
8	1	-	-	2,3	2	1	2	1	-
9	1	2	1	1	1	1	1	19-21	19,20
10	1	-	1**	1	1	1	1	1,2	-
11	1	-	1	1	1	1	1	1	-
12	1,2	-	-	-	-	-	2,3	-	-

Chaetotaxy based on one pupal skin associated with the holotype.

*multiple, **present or absent

Table 2. Chaetotaxy of the larva of *Topomyia (Suaymyia) suchariti*.

No.	Seta Head	Thorax			Abdomen	
		P	M	T	I	X
0	1	2	-	-	-	-
1	1	1-3	1	1	2	6
2	-	1	1	1,2	1	17
3	1	1	1	1-4	1	11
4	1	2	1	1	2-7	18-23
5	1	6	1	1	1	-
6	1	1	1	1	1	-
7	1	4	1	8	1	-
8	1	6	4,5	1	-	-
9	1	6	3,4	9	1	-
10	1	2	1	1	1	-
11	1	1	1	1	1	-
12	1,2	1	1	1	-	-
13	2	-	-	7-9	1	-
14	-	1	2	-	-	-

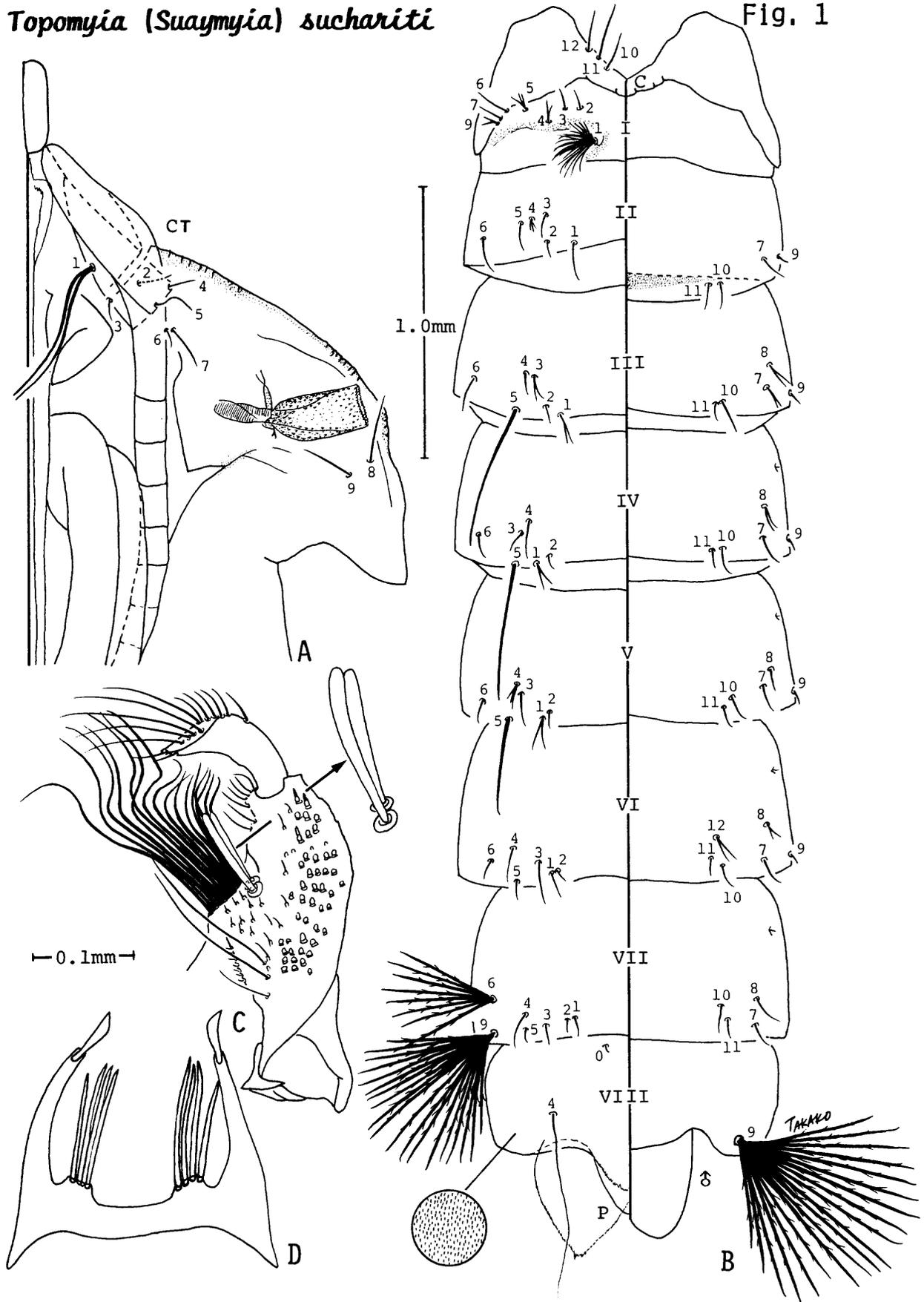
Chaetotaxy based on one larval skin associated with the holotype.

Explanation of Figures

- Fig. 1. Adult and pupa of *Topomyia (Suaymyia) suchariti*
- A. Cephalothorax of pupa
 - B. Abdomen of male pupa
 - C. Male genitalia (dorsal aspect)
 - D. IXth tergum
- Fig. 2. Larva of *Topomyia (Suaymyia) suchariti*
- A. Thorax and abdominal segment I
 - B. Head
 - C. Mandible and maxilla
 - D. Mental plate
 - E. Distal part of antenna
 - F. Comb scale
 - G. Terminal segments

Topomyia (Suaymyia) suchariti

Fig. 1



Topomyia (Suaymyia) suchariti

Fig. 2

