

***Topomyia (Suaymyia) miyagii* (Diptera: Culicidae):
A new species from Flores Is., Indonesia**

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Abstract: A new species, *Topomyia (Suaymyia) miyagii*, is described from Flores Is., Indonesia. The adult male and female, and male genitalia are described in detail and illustrations of the male genitalia are provided. Description and illustration of larva and pupa are also provided based on incomplete specimens.

Key words: *Topomyia*, subgenus *Suaymyia*, mosquito, new species, Flores Island, Indonesia

In August 1997, while collecting mosquito larvae at Flores Is., Lesser Sunda Islands, Indonesia, at 700 m above sea level, several immatures of *Topomyia* species were collected in bamboo internodes and newly cut bamboo stumps. They were transported to the laboratory of Medical Zoology, University of the Ryukyus, Japan where they were reared individually. After careful examination and comparison with other species of the genus *Topomyia* (Knight and Stone, 1977; Ward, 1984, 1992; Lu et al., 1997), we were able to confirm the status of this species and here describe it as a new species and name it *Topomyia (Suaymyia) miyagii*. The terminology used follows Harbach and Knight (1980, 1982).

Topomyia (Suaymyia) miyagii

Toma et Mogi, sp. nov.

(Figs. 1-3)

Male. Head: Vertex with diamond-shaped scales reflected silvery. Occiput covered densely with black spatulate scales and without transverse row of erect scales at back of head. Ocular setae well

developed, close to margin of eye; 2 (one pair) long reclinate golden interocular setae present. Postgena with a patch of silvery and golden scales. Antenna dark, pedicel with minute setae on mesal side; flagellomere moderately verticillate, each flagellar whole with 7-9 setae, longest seta about 0.3 of antenna length. Clypeus dark and pubescence without setae and scales. Proboscis (2.4 mm) dark, slender slightly bent upward toward apex, and slightly expanded distally and with ventral line of pale scales from base to distal 4/5. Maxillary palpus dark-scaled, short, about 0.6 length of proboscis.

Thorax: Scutum covered densely with narrow curved brown scales and with a median silvery line from anterior promontory to prescutellar area; the line consisting of double rows of overlapping flat silvery scales. Thoracic pleura covered with silvery or golden spatulate scales on postpronotum, proepisternum, subspiracular, postspiracular, paratergite, mesokatepimeron and mesanepimeron areas. Conspicuous black setae absent on the pleuron, except about 10 anteprenotal and several brownish prealar. Mesopostnotum with-

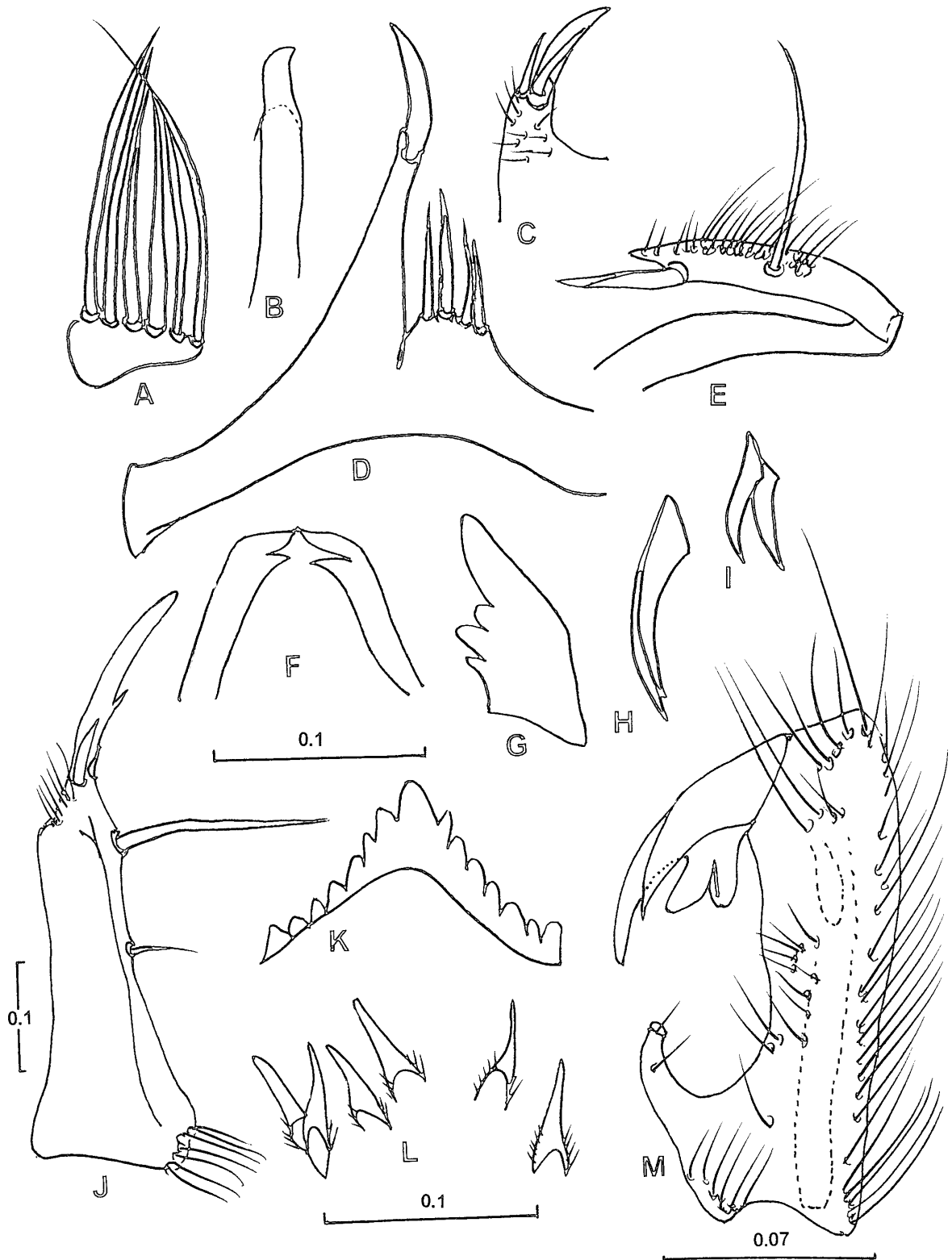


Fig. 1. Adult male genital (A-F), male legs (H, I, M) and larval (G, J-L) apparatus of *Topomyia* (*Suaymyia*) *miyagii* sp. nov.

A, setae of subapical lobe; B, paraproct; C, Claspette; D, tergum IX lobe; E, apical part of gonostylus; F, phallosome; G, mandible; H, mid unguis; I, hind unguis; J, maxillary horn; K, dorsomentum; L, comb scales; M, fore tarsus (Ta-15) and unguis.

out scales and setae. Scutellum with 4 setae and a patch of several silvery scales on median lobe and 3 on each lateral lobe and with brown, spatulated scales.

Wing: Length 3.63 mm; Cell R_2 about 1.36 of stem R_{2+3} ; alula with fine piliform scales on margin distally; upper calypter without setae.

Haltere: Scabellum pale; pedicel and capitellum dark-scaled.

Legs: Coxae and trochanters yellow, with silvery-white scales, trochanters with some dark scales dorsally at apex; femora, tibiae and tarsi dark-scaled dorsally, yellow-scaled ventrally. Fore and mid femora same length and these longer than hind femur. All femora longer than proboscis; fore and mid femora longer than fore and mid tarsi; hind tarsus as long as

hind femur. Terminal segment of fore tarsus (Ta-I5) modified as a fishhook (Fig. 1M) with one terminal and subterminal fine setae. Fore unguis large unequal, the larger one with bilobed lateral tooth (Fig. 1M). Ungues of mid and hind legs small, paired without small lateral tooth (Fig. 1H), the former a little larger than the latter (Fig. 1I).

Abdomen: Terga dark-scaled with bluish reflection when viewed obliquely, spatulate golden yellow-scaled laterally, a line of demarcation between dark and golden scaling more or less straight on terga II and III and tending to extend slightly dorsad basally on terga IV-VII; tergum I with lateral tuft of about 15 setae. All sterna with yellow spatulate scales.

Genitalia (Fig. 1A-F, 2 A-D): Lobes of

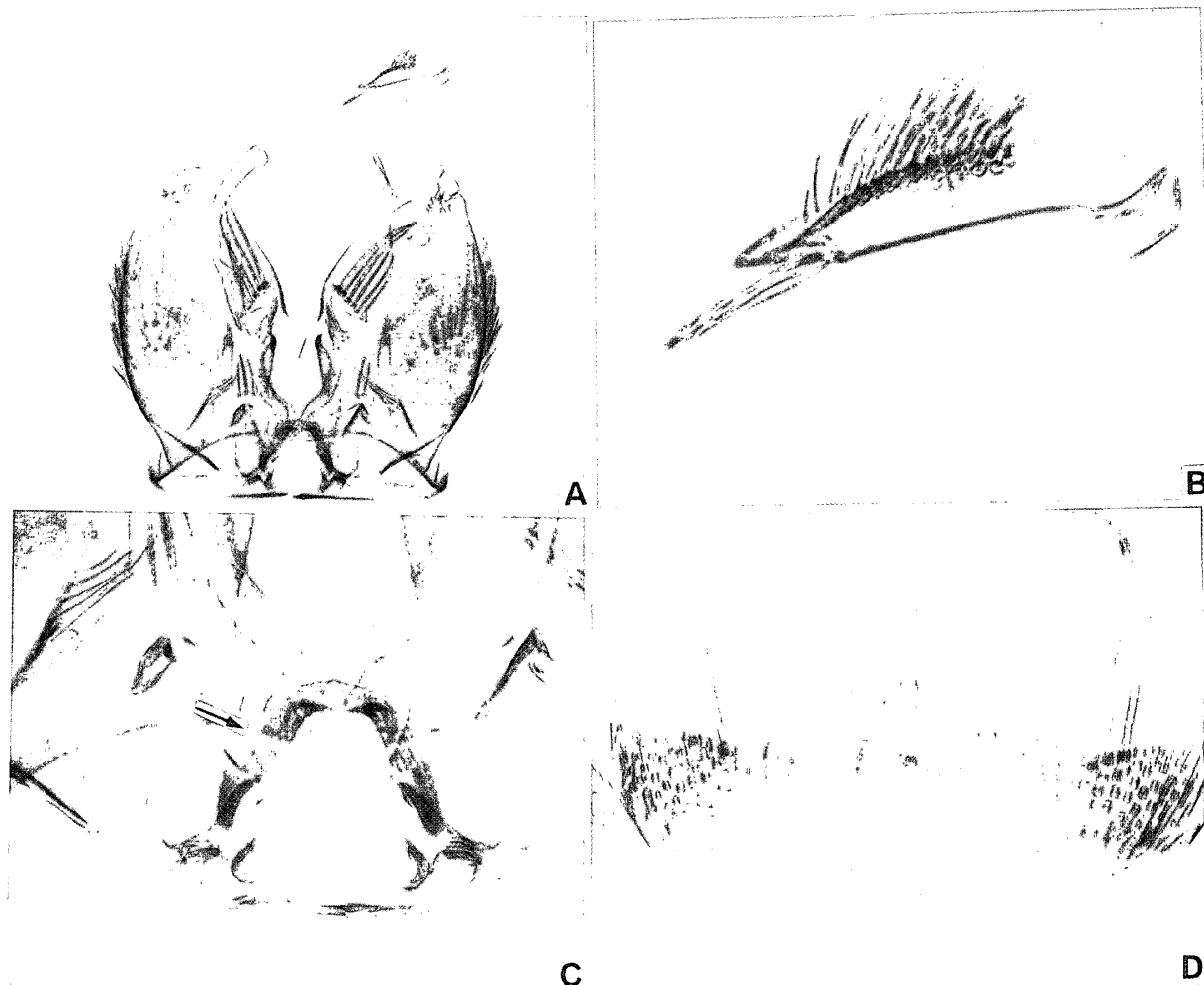


Fig. 2. Adult male genital apparatus of *Topomyia (Suaymyia) miyagii* sp. nov.

A, genitalia from beneath; B, apical part of gonostylus; C, phallosome; D, sternum IX.

tergum IX (Fig. 1D) widely separated by narrow bridge, each lobe attenuated apically, terminating in single stout blade-like seta and 3 or 4 flattened setae on inner basal margin of each lobe, mid one more conspicuous than others. Gonocoxite length about 1.8 times breadth, outer surface of gonocoxite with many setae extending, inner subapical lobe with a row of 6 long setae bent (Fig. 1A). Claspette (Fig. 1C) setaceous, short and thumb-like with one prominent and 2 small flattened setae apically. Gonostylus as long as gonocoxite, narrow, curved basally and swollen apically with a cluster of many (more than 20) dorsal setae with one prominent subapical seta and blade-like gonostylar claw

(Fig. 1E, 2B). Phallosome (Fig. 1F, 2C). Paraproct large (Fig. 1B). Sternum IX (Fig. 2D) crown-shaped with one large spine-like seta on central part of posterior margin and with 10–15 prominent setae bent apically.

Female. Wing 3.25 mm. Proboscis 2.1 mm, longer than antenna. Resembles male except tergum and sternum VIII with well developed marginal setae. Fore tarsus (Ta-I5) not modified. Ungues of all legs small and simple.

The following descriptions of pupa and larva are based on the exuviae mounted incompletely on slides.

Pupa. Integument of cephalothorax (CT) and abdomen light yellow.

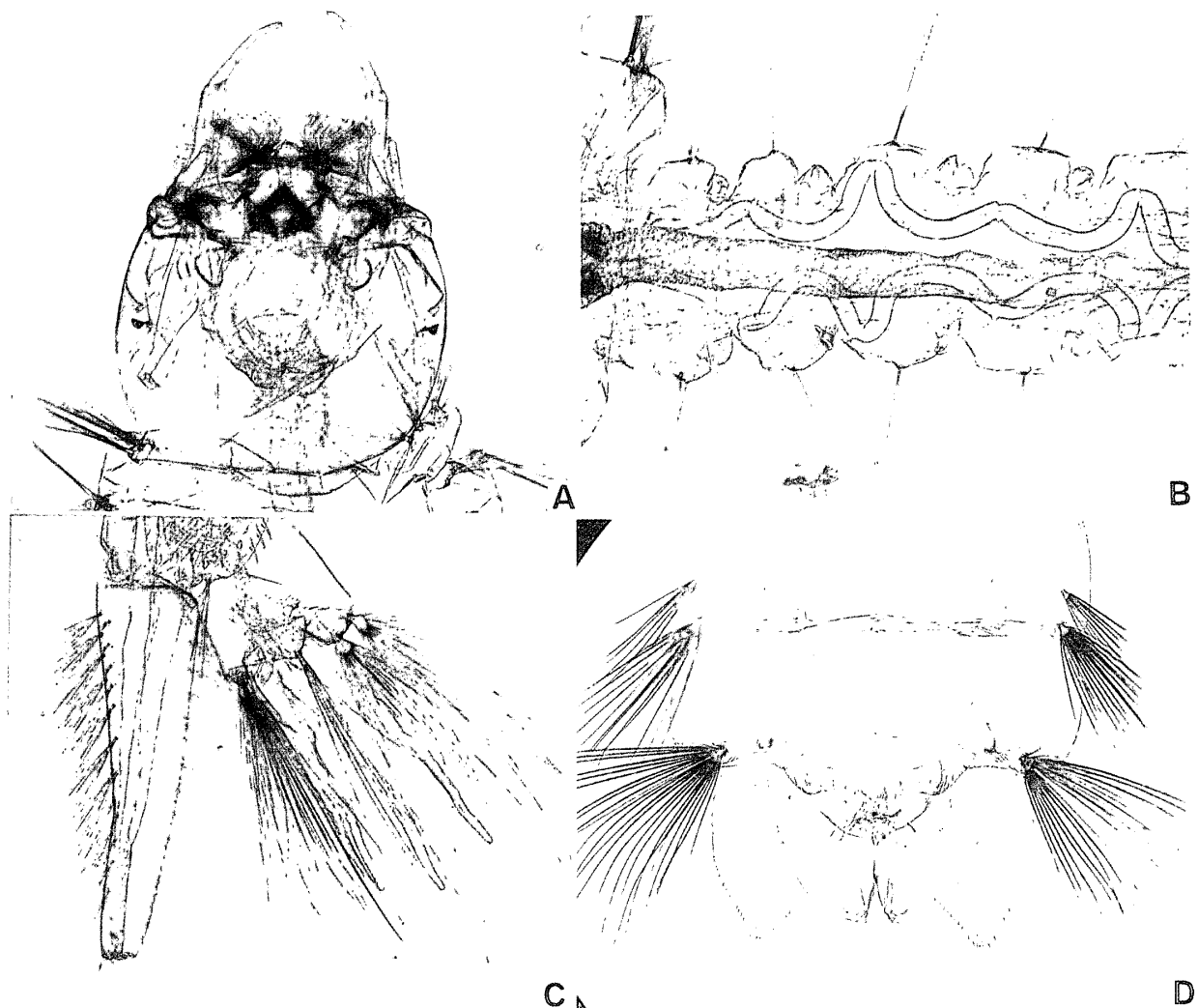


Fig. 3. Larval (A–C) and pupal (D) apparatus of *Topomyia (Suaymyia) miyagii* sp. nov.

A, head; B, abdominal segments; C, terminal segments and siphon; D, terminal abdominal segment of male.

Cephalothorax: *Trumpet*: short, 0.3 mm. Dark yellow with fine sculpturing, slightly flattened, not laterally expanded; index about 2.7. Seta 1-CT long, double; 8-CT single well developed, longer than 9-CT; 2-7, 10-11-CT single and weak. *Abdomen*: 4.7 mm. Seta 1-I dendritic with 2, 3 main branches, each divided repeatedly and ending as fine hairlike branches. Setae 5-II-VI long, usually single; 6-VII long, 8 branched, 9-VII (Fig. 3D) longer than seta 6-VII and 10-12 branched, both setae aciculate; 9-VIII larger than 9-VII, 20-26 branched, aciculate. Other setae on segments II-VIII weak and single; minute spines on segments II-VIII. Male genital lobe as long as paddle (Fig. 3D); female genital lobe short, 0.59 of paddle. *Paddle*: 0.6 mm. Pigmented uniformly and lightly, without midrib and with marginal spicules; length 1.23 times width.

Larva. *Head* (Fig. 1G, J, K, L; 3A-C): Length about 1.05 mm, as long as width, pigmentation yellow, integument fine spicules. Dorsomentum (Fig. 1K) dark brown with median tooth and 6-7 smaller teeth on either side. Maxilla with articulated large maxillary horn (Fig. 1J) with 3 ventral teeth and maxilla brush basally; one well developed (as long as horn) bristle on inner side of apical 0.2 maxilla and fine setae on inner side of mid maxilla. Maxillary palpus well developed. Mandible (Fig. 1G) black with a large dorsal tooth. Mandibular brush developed, lateral palatal brush (LPB) developed with fine serration apically. Seta 1-C stout, single; 3,4,6,7-C weak, single; 5-C bifid, 9,10-C weak, single or bifid; 11-15-C weak or obsolete. *Thorax*: Setae 1,3,4-P weak 3-4 branched, 2-P weak, single. 5-P long, many branched, barbed. Setae 1-4-M weak or obsolete, 5,6,7-M long, single; 9,10,12-M long, 2-3 branched, barbed; 10-11-P weak, single. Seta 6,8-T weak or obsolete, 7-T long, many branched, barbed; 9-T long, 7-8 branched, barbed; 10-T long single, barbed; 13-T long fan-shaped. *Abdomen*: seta 1-I-VI weak, 2-10 branched; 6-I, II, V large (Fig. 3B), single; 6-III, IV, VI weak, 4-

5 branched; 7-I, III-VI large 1-3 branched; 7-II short, 4-5 branched. Other setae weak or obsolete. Comb scales (Fig. 1L) in an irregular row, 6 or 7 individual scales, each large, pointed and with fine lateral fringe at base. *Siphon* (Fig. 3C): long, about 1.1 mm, broad at base and tapering towards apex. Index (Length/Median width) about 5.2; pecten teeth absent. Usually 17 dorsal tufts, each with 6-10 branches; 24 of ventral tufts, each with 2-12 branches. These tufts situated in a zigzag row. Integument with spicules evenly distributed. Saddle about 0.26 mm. Setae 1-4-X large, stellate.

Holotype. Male (970813-1), with larval and pupal (69) exuviae mounted on a slide possesses the following collection data: Tomberab, Ende, Flores, Indonesia, 13 Aug. 1997, collected a larva from newly cut small (2-3 cm diameter) bamboo stump by I. Miyagi. Paratypes 2 males with larval and pupal exuviae mounted on slides (169) and (215), same collection data as the holotype. Paratypes, male (970812-19) with pupal exuvia (38) and genitalia (G-18) on slides, Wolowege, Ende, Flores, Indonesia, 12 Aug. 1997. 4 females (970812-19), with larval and pupa exuviae mounted on slides (190), (199), (205), (237), Wolowege, Ende, Flores, Indonesia, 12 Aug. 1997, collected by I. Miyagi and T. Toma.

Some of the type specimens will be deposited in the National Museum of Natural History (NMNH), Smithsonian Institution, Washington, D. C.

Etymology. It is our honor to dedicate this new species to Dr. Ichiro Miyagi for his contributions to the study of mosquito taxonomy of Southeast Asia.

Taxonomic Discussion. *Topomyia miyagii* belongs to the subgenus *Suaymyia* Thurman, as defined by Thurman (1959). This species has similarities in the male genitalia with *Topomyia decorabilis* Leicester, 1908 from Malaysia (Edwards, 1922), *Topomyia dulongensis* (Gong et al., 1999) from Yunnan, South China, *Topomyia suchariti* (Miyagi and Toma, 1989) from Thailand

and *Topomyia imitatus* (Baisas, 1946), from Mindanao, Philippines. *Topomyia miyagii* can be easily distinguished from them by the combination of the following distinctive characters of the male: (1) Lobes of tergum IX widely separated, joined by narrow bridges; each lobe attenuated apically with single, blade-like spine, 3–4 filament-tipped stout setae on inner lobe of either side of bridge; (2) Inner subapical lobe of gonocoxite with 6 stout spines with many fine hairs; (3) Claspette setaceous, short and thumb-like with one prominent and 2 small flattened setae apically; (4) Gonostylus curved, like goose head, pointed at apex bearing one long seta and a patch of many (more than 20) dorsal setae; (5) Crown-shaped sternum IX with one large spine-like central seta; and (6) Modified fore tarsus (Ta-I5) and ungues. No species of the subgenus *Suaymyia* has not been recorded from other Lesser Sunda Islands, such as Bali, Lombok and Timor Islands, Indonesia where we made extensively mosquito collection.

Bionomial Notes. The immatures of *To. miyagii* were found exclusively in the newly cut small sized (about 3cm diameter) bamboo stumps or bamboo internodes bored by some insects in mountain forest at elevation of about 700 m.

Distribution. Only from the type locality, Ende, Flores Is., Indonesia.

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REFERENCES

- Baisas, F. E. 1946. Notes on Philippine mosquitoes, XII. *Topomyia*. Vol. 22. pp. 31–47, illus. Mon. Bull. Bur. Hlth Philipp., Manila.
- Edwards, F. W. 1922. A synopsis of adult Oriental culicine (including megarhinine and sabethine) mosquitoes. Part II. *Indian J. Med. Res.*, 10: 430–472.
- Gong, Z., Zhang-hong, L. I. and Shi-quan, L. I. 1999. A description of the male of *Topomyia (Suaymyia) dulongensis* (Diptera: Culicidae) with supplement on certain characters of larvae. *Entomotaxonomia*, 21: 225–227 (In Chinese with English summary).
- Harbach, R. E. and Knight, K. L. 1980. Taxonomists' Glossary of Mosquito Anatomy. 415 pp. Plexus Publishing, Inc., Marlton.
- Harbach, R. E. and Knight, K. L. 1982. Corrections and additions to taxonomists' glossary of mosquito anatomy. *Mosq. Syst.*, 13: 201–217.
- Knight, K. L. and Stone, A. 1977. A catalog of the Mosquitoes of the World (Diptera: Culicidae). Second edition. Vol. 6. 611 pp. Thomas Say Found., Maryland.
- Lu, B., Li, B. and Ji, S. 1997. Fauna Sinica. Insecta Vol. 8. Diptera: Culicidae. pp. 476–500 (Chinese). Science Press. Beijing, China.
- Miyagi, I. and Toma, T. 1989. A new species of *Topomyia (Suaymyia) suchariti* from Thailand (Diptera: Culicidae). *Mosq. Syst.*, 21: 16–24.
- Thurman, E. B. 1959. A Contribution to a Revision of the Culicidae of Northern Thailand. Bull. A-100, 182 pp. Univ. Maryland Agr. Exp. Sta., Maryland.
- Ward, R. A. 1984. Second supplement to "A Catalog of the Mosquitoes of the World (Diptera: Culicidae)". *Mosq. Syst.*, 16: 227–270.
- Ward, A. R. 1992. Third supplement to "A Catalog of the Mosquitoes of the World (Diptera: Culicidae)". *Mosq. Syst.*, 24: 177–230.