

## Description of a New Species of the Genus *Topomyia* Leicester from the Ryukyu Islands, Japan (Diptera: Culicidae)

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ABSTRACT : The male, female, pupa and larva of *Topomyia* (*Suaymyia*) *yanbarensis*, a new species from Okinawa-honto, northern Ryukyu Island, are described. The bifurcate clasper of the male genitalia is unique in this species and does not resemble any described species of this genus. The larvae were found in the water accumulating in newly cut bamboo stumps and in erect bamboo internodes bored by cerambycid beetles. This is the first record of the genus *Topomyia* from Japan.

*Topomyia* Leicester, 1908

*Topomyia* Leicester, 1908, Cul. Malaya: 238.

Type-species: *Topomyia minor* Leicester

*Pseudograhamia* Theobald, 1910, Rec. Ind. Mus. 4: 26.

Type-species: *Pseudograhamia aureoventer* Theobald

*Topomyia* is closely related to *Malaya* Leicester as pointed out by Marks (1960) and Mattingly (1971) but is easily separated by its normal proboscis and male genitalia.

This genus is distinguished by the following combination of characters:—

ADULTS: Dark to dark brown species; vertex, pleura and sternites with characteristic metallic scales. Usually a median stripe consisting of two rows of similar scales on mesonotum. Antennae not strongly plumose in either sex. Palpi short in both sexes; proboscis normal, shorter than forefemur; postspiracular bristles absent; R<sub>2</sub> longer than its stem; squama bare; legs long and slender; hindfemur and tibia shorter than fore- and/or midfemora and tibiae.

LARVA: Mouth brushes short and dense, the inner serrated; antenna short and smooth, with short preapical antennal hair (IA). Head setae usually simple, not many branched. Setae 5- and 6-P large fan-shaped tufts arising from a common tubercle; metathorax without long dorsal spines. Comb scales, siphonal hairs and pecten teeth variable in shape and number. Ventral brushes (4-X) with a single pair of long setae.

Thurman (1959) recognized the following two subgenera which may be characterized as follows:—

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Subgenus *Topomyia* with 2nd segment of foretarsus equal to or shorter than 3rd, apical tarsomeres usually elbowed, directed posteriorly, claspette with large rod-like dorsal lobe and lobes of tergite IX close together.

Subgenus *Suaymyia* with 2nd segment of foretarsus longer than 3rd, tarsomeres straight, claspette absent or, if present, without rod-like dorsal lobe and lobe of tergite IX widely separated from each other.

*Topomyia (Suaymyia) yanbarensis*, sp. nov.

A dark medium-sized mosquito with metallic markings on head, anterior promontory, pleura and sternites. The larva has siphon with weakly developed dorsal and ventral series of setae and 6–9 well developed spatulate pecten teeth extending over most of siphon and a row of 5–10 comb scales.

MALE: Wing length (without fringe): 2.9 mm, proboscis: 1.8 mm, forefemura: 2.4 mm. *Head*: With a broad silvery patch of scales in front of middle of vertex and extending on each side below, the remainder dark broad scaled, with purplish luster; erect scales absent; 2 frontals (verticals) and 6 orbitals strong; torus (pedicel) light brown, with pubescence; antenna (without pedicel) about as long as proboscis; flagellar segments black, each with 7–8 long black verticillate hairs; 1st flagellar segment with several small flat scales basally; clypeus light brown, slightly elongated without black scales; palpus very short, about 1/10 length of proboscis (excluding labella), with black scales and with fine apical bristle; proboscis slightly shorter than forefemur, swollen towards apex, with a long ventral bristle at base, black scaled somewhat dark purplish dorsally, pale or pale-reflecting scales on basal 1/8 above and throughout the ventral part. *Thorax*: Mesonotum brownish black integument covered with narrow curved black scales and with a median longitudinal stripe of broad flat silvery scales from anterior promontory to about level of wing root, the stripe of scales conspicuous on anterior promontory; lateral sides of anterior promontory, anterior, supralar and prescutellar areas with many well developed bristles. Dorsocentral bristles weak or absent. Scutellum with broad flat silvery scales and 4 strong bristles on midlobe and dark brown narrow scales and 3 strong bristles on lateral lobes; postnotum dark brown. Anterior pronotal lobe with silvery scales and with about 15 well developed bristles. Propleuron with silver scales and with 1 or 2 yellowish bristles; paratergite, postspiracular area, sternopleuron and metapleuron with dense, silver scales without bristles; 3 or 4 black spiracular bristles; prealar knob with silver scales and 2 black bristles; upper mesepimeron with 5–7 yellowish bristles. *Wing*: Veins with dark brown, somewhat metallic scales; the scales thickly set on costa, subcosta and  $R_1$ ; alula with about 10 fine bristles;  $R_2$  about 3.0 times length of its stem ( $R_{2+3}$ );  $M_{1+2}$  about 1.3 X length of M. Vein 1A curving downward to margin slightly beyond fork of vein Cu. Haltere large; knob elongate, dark scaled dorsally, with some purple luster; the scales extending to base of pale stem. *Legs*: Femora, tibiae and tarsi of all legs with dark scales dorsally and metallic brown to pale scales ventrally and with a lateroventral pair of fine black setae; coxae with dense flat silver scales and with many yellowish bristles; only mid coxa with a black bristles; claws small and simple, without bristles. *Abdomen*:

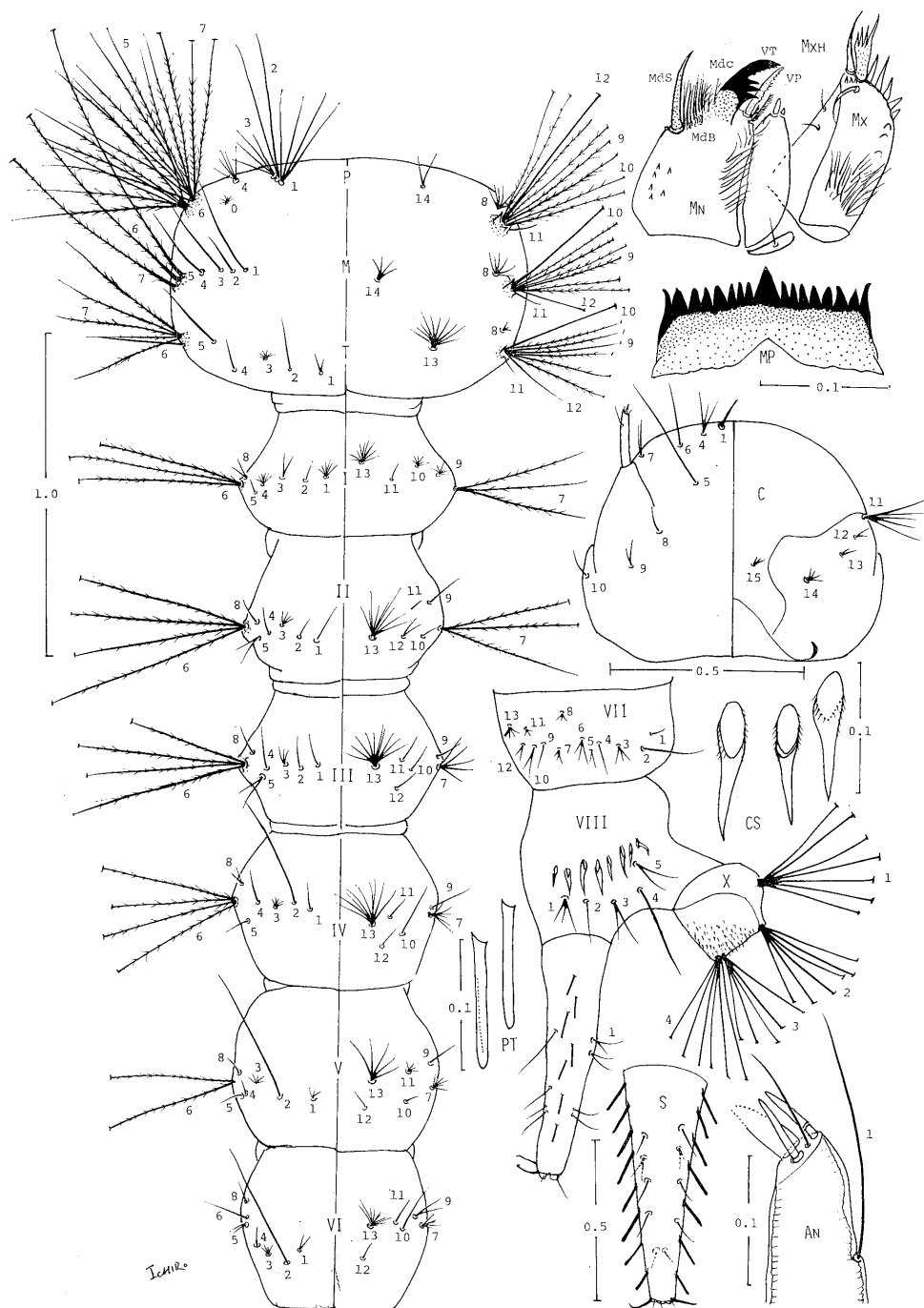


Fig. 1. *Topomyia (Suaymyia) yanbarensis* sp. nov., 4th instar larva. AN, apex of antenna; C, head; CS, comb scales; MN, mandible; MP, mental plate; MX, maxilla; MXH, maxillary horn; PT, pecten teeth; S, siphon (dorsal aspect). scale: mm.

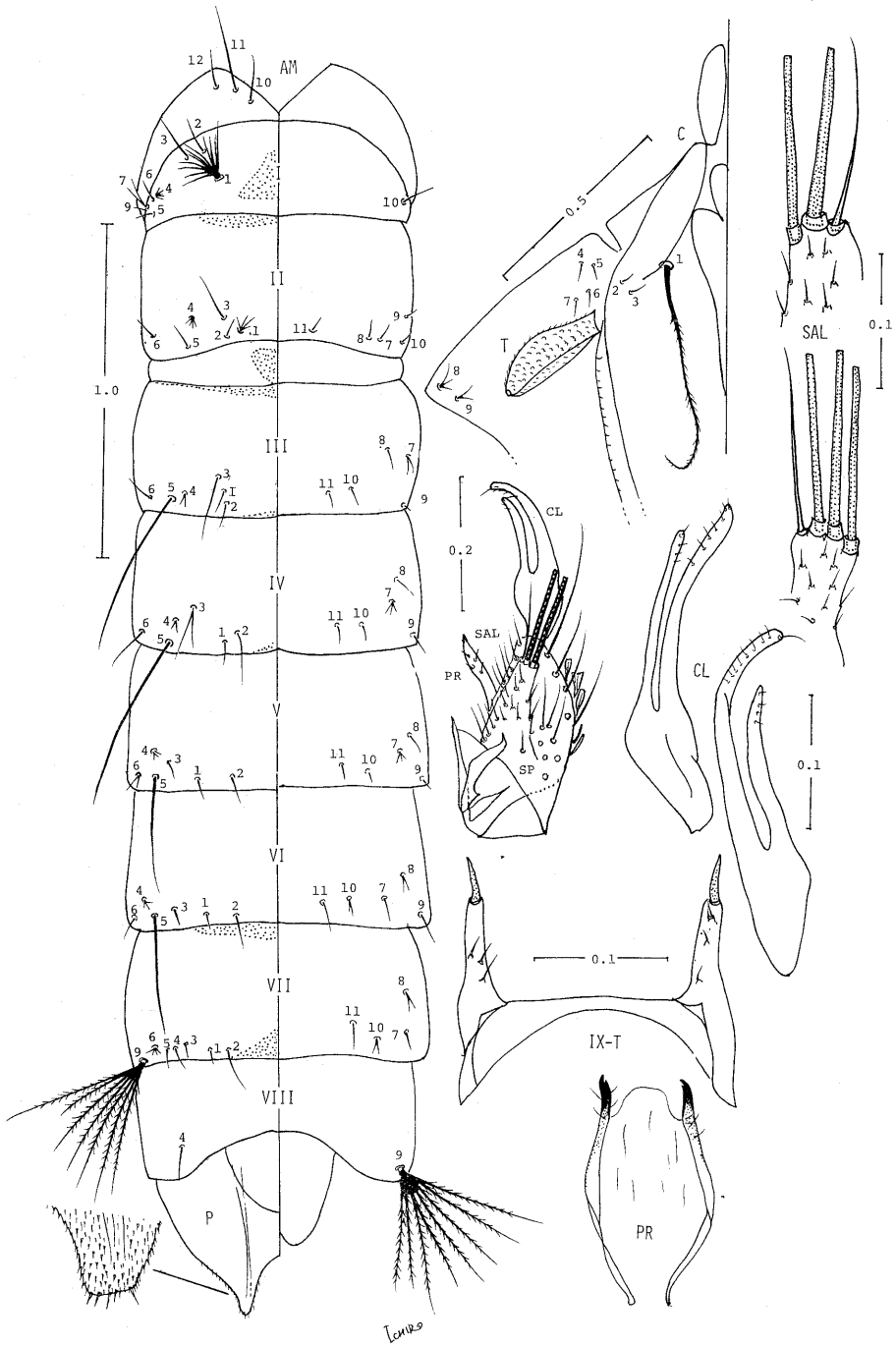


Fig. 2. *Topomyia (Suaymyia) yanbarensis* sp. nov., pupa and male genitalia. AM, abdomen and metanotum; C, cephalothorax; CL, clasper; P, paddle; PR, proctiger; SAL, sabapical lobe; SP, sidepiece; T, trumpet; IX-T, tergite IX. scale: mm.

Tergites I–VIII dark scaled dorsally, with iridescent luster and with pale golden scales on lateral margin; tergite and sternite VIII with many well developed marginal bristles distally; sternites I–VIII with dense broad pale golden scales and with many yellowish bristles.

*Genitalia* (Fig. 2): Sidepiece (SP) about 1.5 times as long as broad, with many well developed bristles and dark scales laterally and ventrally; tergomesal margin with many fine setae. Ventrosubapical tergomesal lobe (SAL) of sidepiece usually with 2 long stout clubbed spines (sometimes 3), and 1 or 2 long slender bristles on apical margin. Claspette (basal lobe of sidepiece) absent; clasper (CL) 0.8 length of sidepiece, expanded basomedially and bifurcated into 2 large stalks, the outer (ventral) one larger and curved with 1 apical seta and several fine subapical setae, the other slender with several fine setae on ventroapical margin. Lobes of IXth tergite prominent, well separated from each other, with 1 apical, and sometimes 1 subapical stout, seta and a few fine setae at base and middle. Sternite IX broad with many well developed marginal bristles. Proctiger (PR) large, with many fine bristles antero-ventrally, the apex slender with sclerotized curved point. Phallosome elongated tubular, expanded slightly medially with apex membranous pointed; paramere elongated, with apex curving toward dorsum; laterobasal lobe present. Basal piece pointed apically.

FEMALE: Wing length: 3.0 mm, proboscis: 1.7 mm, forefemur: 2.2 mm. Differs from male as follows:—

Proboscis uniformly dark purplish scaled dorsally, pale-reflecting ventral scales less conspicuous than in male, palpus about 1/11 length of proboscis; antenna as long as proboscis; tergite VIII dark scaled with many well developed marginal bristles; sternite VIII with many short brownish marginal bristles; 3 spermathecae; cercus with 3 lobes with very fine setae on apical margin; postgenital plate weakly sclerotized, with many short spine-like setae on posterior margin.

FOURTH INSTAR LARVA (Fig. 1): Whole length: 6.8–7.2mm, siphon: 0.90–1.23 mm. *Head*: 1.0–1.2 mm long; 0.78 times as long as broad; 1–C 0.75 length of antenna, stout and pointed at apex; 4–C 2–4 branched anterior to 6–C; 5–C long, single, caudad of antennal base; 6–C single, anterior to 7–C; 7–C usually double and in front of base of antenna; 8–C weak and single; 9–C weak and double; 10–C weak and single; 11–C 6 branched; 12–C single; 13–C 2 branched; 14–C 4 branched; 15–C 3–4 branched. *Antenna*: 0.24 mm long; 0.25 times as long as head, without spicules; 1–A single, arising at apical 1/3; 2–6 arising close together at apex. *Mandible*: Enlarged with strongly sclerotized large ventral tooth (VT) and with 1 well developed flattened elongate ventral blade (VB) and also with 2 or 3 small pectinate brushes (PB); anterodorsal portion of the mesal surface with well developed acute filamentous mandibular brush (MdB) and also with linearly-arranged group of bristle-like mandibular comb (MdC); 1 long mandibular spur (MdS); a group of filamentous hairs on lightly sclerotized projection; anterolateral margin of mandible with a laterodorsal grouping of small spines. Mental plate (MP) rather wide, with 7–8 teeth on each side of prominent median tooth. Maxilla (MX) large, the inner apical angle produced into a large apical serrate spur; 2 or 3 strong, and a few more delicate, spines on dorsoapical margin, maxillary horn (MxH)

not strongly developed, a group of numerous flexible hairs on inner basal surface. *Thorax*: Seta 0-P small many-branched; 1-P long with 4-5 barbed branches; 2-P long with 1-2 branches; 3-P with 3-4 branches; 4-P with 8-10 branches; 5- and 6-P large with multiple barbed branches arising from common pigmented tubercle; 7-P large with 2-3 barbed branches; 8-P weak with 6-8 branches; 9-P with 5-6 barbed branches; 10-P usually double; 11-P very small, single or double; 12-P long, single; 10-12-P arising from common pigmented tubercle bearing 1-2 small spines; 13-P very fine with usually double; 14-P weak usually double. Setae 1-4-M single; 5-7-M long, single, barbed; 8-M large fan-shaped, with 8-10 branches barbed; 9-M long, fan-shaped with 6-8 barbed branches; 10- and 12-M long single, barbed; 11-M fine 1-2 branched; 9-12-M arising from a common tubercle bearing one small, stout spine. Seta 1-T 1-3 branched, 2-T single, 3-T 4-5 branched, all these weak; 4-T single; 5-T long, single; 6-T long, single; 7-T long, fan-shaped with 5-6 barbed branches; 8-T weak, with 3-5 branches; 9-T long, fan-shaped with 9-10 barbed branches; 10-T long, single; 11-T slender, single; 12-T single; setae 9-12-T arising from a common tubercle bearing 1 stout spine; 13-T long with 11 branches. *Abdomen*: Lightly pigmented throughout; in life pale tan in color. Setae 6-I-V large with 2-5 barbed branches arising from an

Table 1. Chaetotaxy of the 4th instar larva of *Topomyia (Suamyia) yanbarensis* sp. nov.

SETAE No.	HEAD	THORAX			ABDOMEN								
		PRO-	MESO-	META-	I	II	III	IV	V	VI	VII	VIII	
0	—	m(W)	—	—	—	—	—	—	—	—	—	—	—
1	1	4-5*	1	1-2(W)	5-8	1-2	1	1	2-4 (W)	2-4 (W)	1-3 (W)	3-4	
2	—	1-2	1	1	1	1	1	1(L)	1(L)	1(L)	1(L)	1	
3	—	3-4	1	5-6(W)	1-3	4-6	2-3	4-5 (W)	4-5 (W)	3-4 (W)	2-4 (W)	1-2	
4	2-4	m	1	1	6-8	1	1	1	1	1	1	1-2	
5	1(L)	m(B)	1(L)	1(L)	1	2	2	1	1	2	1-2	1-2(L)	
6	1	2-3(B)	1-2(L,B)	1(L)	3 (L,B)	2-4 (L,B)	4 (L,B)	3-5 (L,B)	2 (L,B)	1(W)	1-3 (W)		
7	2	m(B)	1(L,B)	5-6 (L,B)	3-5 (L,B)	3-4 (L,B)	4-6 (W)	4-6	5-6	4-6 (W)	1-3 (W)	1-X 3-8(L)	
8	1(W)	6-8(W)	6-8(B)	3(W)	1-2	1	1(W)	1-2	1	1	3-5 (W)	2-X 6(L)	
9	2(W)	5-6(B)	6-8(L,B)	9-10(L,B)	7-9	1	1	1	1	2	1		
10	1(W)	2(B)	1(L)	1(L)	7-8	1	1	1	1	1	1-2		
11	4-6	1-2(W)	1-2(W)	1(W)	1(W)	1(W)	5(W)	1(W)	4-5 (W)	1-2 (W)	2-3 (W)	3-X 4-6(L)	
12	1-2	1(L)	1(L)	1	—	2-4	1	1(W)	1	2-3 (W)	2		
13	1-2	—	—	m(L)	m(L)	m(L)	m(L)	m(L)	5-6 (L)	m(W)	5-6 (W)	4-X 3-9(L)	
14	4	2(W)	4	—	—	—	—	—	—	—	—		
15	3-4	—	—	—	—	—	—	—	—	—	—		

B : barbed; W : weak; L : large sized ; m : multiple (with more than 10 branches)

\* The range encountered in the examined 10 specimens.

expanded base, these setae markedly different from setae 6-V-VII; 2-IV-VII all large, with attenuated multiple branches; segment VIII with a row of 5-10 ( $\bar{x}=7$ ) comb scales, these are pointed apically and wide at base, with fine marginal fringes only on basal half. *Siphon*: Index 3.5 (3-4.5); moderately pigmented, tapering slightly, curved forward; acus absent; a dorsolateral row of 6-9 ( $\bar{x}=7.5$ ) pecten teeth very large, without denticles or marginal fringes; the distal part of the pecten somewhat broadened or spatulate; the pectens extending over most of the siphon dorsolaterally; 2 or 3 irregular pairs of dorsolateral setae (2a-S) weak, usually single; 4-5 asymmetrical pairs of delicate ventrolateral hairs (1a-S), the proximal one (1) usually large with 2-4 branches, the others usually single; dorsoapical seta 2 stout with pointed hook-like tip, the other apical setae (2-9) weak and single. *Anal segment*: Saddle incomplete, small, with fine scattered spicules; 1-X long with 3-8 branches; 2-X usually long with 6 branches; 3-X long with 4-6 branches; 4-X long with 3-9 branches; anal papillae variable in size, long, unequal, tapering apically.

PUPA (Fig. 2): Abdomen, 4.0-4.7 mm long. Trumpet, 0.5 mm long. Paddle, 1.0 mm long. Chaetotaxy as figured. Cephalothorax: Moderately pigmented; setae lightly pigmented except for 1-C which is long (about 0.8 mm), black, flexible, barbed, single and somewhat hook-like at apex; setae 2-7 weak and single, 8 and 9 well developed and single or double, rarely 3-branched. *Trumpet*: Yellowish brown throughout, uniformly reticulate; about 3.2 times as long as its greatest width, with oblique opening. *Metanotum*: Setae 10-12 all developed. *Abdomen*: Lightly pigmented throughout, microtrichia present on segments II-VIII, anterior and posterior margins and anterior mid dorsal line of segments I-VI darkly pigmented. Segment I with float seta 1 well developed, flattened and dendritic with 15-20 branches; setae 2, 3, 5, 6 and 7 single, moderately developed, except seta 7 which is usually double; setae 9 and 10 single and weak; seta 4 weak with 2-4 branches. Segment II with seta 1 usually with 3 branched; setae 3 and 5 well developed, usually single; setae 2, 6, 8, 9, 10 and 11 single, weak; seta 4 weak, with 2-5 branches; seta 7 usually double; segment II-VI with setae 1, 3, 6, 8, 9 and 11 weak, usually single, except that 3-III and IV are well developed; seta 2 short, stout and single; setae 4 and 7 weak with 2-3 branches; seta 5 strongly developed, single. Segment VII with setae 1, 3, 4 and 5 weak, usually single; seta 2 short, stout and single; setae 6 and 8 weak with 4-8 branches; setae 7, 10 and 11 weak, single or double; seta 9 large, multiple, inserted dorsolaterally. Segment VIII with seta 4 weak, single; seta 9 large, many-branched, inserted ventro-dorsally; the other bristles absent or strongly reduced. *Paddle*: Longer than segment VIII, tapering to blunt apex, with very fine spicules uniformly distributed and with many fine spines on apical margin but setae 1 and 2 absent; midrib present.

EGG: Unknown.

HOLOTYPE: Male (No. 751126-2), with larval and pupal skins on slide, found as 4th instar larva in a bamboo internode at Yona, Kunigami northern Okinawa-honto, the Ryukyu Is. Japan, on November 26, 1975, by I. Miyagi.

PARATYPES: 7 males and 4 females with larval and pupal skins on slides; 6 males and 7 females; 6 pupae with corresponding larval skins; 12 larvae or larval skins. Collections were made in bamboo stumps or bamboo internodes at the same locality as holotype from February to November 1975, by I. Miyagi and C. Hoshino. All the types will be deposited in the collection of the Entomological Institute, Hokkaido University, except for one male with larval and pupal skins on slide, one male and female and one larva which will be presented to the British Museum (Natural History) and the U. S. National Museum respectively.

DISTRIBUTION: Okinawa-honto, the Ryukyu Islands.

TAXONOMIC DISCUSSION: Judging from the genital structure of the male, *T. yanbarensis* apparently belongs in the subgenus *Suaymyia*. In the strongly projecting lobes of tergite IX with stout apical spine and in the ventrosabapical tergomal lobes with 2 or 3 strong clubbed spines, at apex, *yanbarensis* is somewhat resembles *Topomyia* (*Suaymyia*) *decorabilis* Leicester, 1908, from Malaya. However, it is readily distinguished from the latter by the strongly bifurcated clasper. As regards the larva, the immature stages of most species in the genus are still undescribed. In having stellate setae poorly developed and the weakly developed siphonal hairs *yanbarensis* may somewhat resembles *Topomyia* (*Topomyia*) *spathulirostris* Edwards, 1923, illustrated by Mattingly (1971), from which it can, however, be readily distinguished by the dorsolateral row of 6-8 very large spatulate pecten teeth, without denticules and marginal fringes and many branched setae 1-4-X. In the field the larva of *yanbarensis* looks and moves like *Malaya genurostris* Leicester but macroscopically it appears larger and has whiter in color. It was never found in the leaf axil of *Alocasia macrorrhiza* in the type-locality.

So far as known to me *Topomyia* is represented in all by 30 species. It has a limited distribution in the Oriental and Indomalayan regions and New Guinea (Papua New Guinea). The genus has not hitherto been recorded from the Ryukyu Islands and adds another to the known Oriental element in the Japanese mosquito fauna.

BIOLOGICAL NOTES: The northern sylvan region of Okinawa-honto is usually called "yanbaru" by the local people in the island. This mosquito appears to inhabit throughout this region but to be very scarce. The immature stages are apparently confined to water collecting in newly cut bamboo stumps and erect bamboo internodes bored by cerambycid beetles (*Abryna coenosa* Newman). The immature larva was usually found singly in the breeding site without any associated mosquitoes of other species. The larva preys upon small crustacea in the water accumulating in the bamboo. In the the laboratory larva feeds readily on young mosquito larvae of other species. Its development is very slow. The habits of the adults in the field are unknown. All the adults in collections were reared from larvae and pupae. The adults have not been attracted to the light traps operated in the habitat of this mosquito. In the laboratory the females could not be induced to feed on man.



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琉球産ギンモンカ属 (*Topomyia*) の 1 新種の記載 (双翅目: 蚊科)

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沖縄本島北部で採集したギンモンカ属 (新称) (*Genus Topomyia*) に属する蚊の形態を詳細に調べた結果, 幼虫の呼吸管棘 (pecten teeth) や雄の生殖器の形態が近似種のそれと全く異なるため, 新種, ヤンバルギンモンカ *Topomyia (Suaymyia) yanbarensis* sp. nov. として, 成虫 (雄, 雌), 蛹及び幼虫の形態を記載した. ギンモンカ属の蚊は現在 30 種が記録されているが, タイ, フィリピン, マレーなど主に東南アジア (ニューギニア, 中国南部からも各 1 種が記録) にのみ棲息する南方系の蚊とされ, 我国からはこれが最初の記録である. 本種の特徴としては, 幼虫では 6-9 対の異常に発達した棍棒状の呼吸管棘が呼吸管の側面に基部から先端に 1 列に生じ, 呼吸管毛の発達が悪いこと, 成虫では雄の生殖器先端の把握片 (clasper) が中央で 2 分岐していることや, 片側 (sidepiece) の内側の亜先端葉に顕著な 2-3 本の剛毛を有することなどがあげられる. 生態的には不明な点が多いが, 幼虫はサビアヤカミキリの喰入によって開孔された生 (青) 竹の筒内の水溜りにのみ発生が限られている様である. 捕食性で主として水中の小動物 (原生動物や甲殻類) を常食していると思われる. 実験室内では蚊の若令幼虫を捕食するが野外で本種が発生している水溜りには他の蚊の発生はほとんど見られなかった. 成虫は前述の孔から出入りすると思われるが野外ではめったに見られず, ライトトラップや, 人間にも全く誘引されなかったし, 実験室のケージ内でも本種の吸血行動は見られなかった. 尚, 沖縄本島北部をこの地方の住民はヤンバル (山原) と呼んでおり, 本種はこの地方一帯に棲息するものと思われるが稀な種である.

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