A NEW BLACKFLY SPECIES OF MAYACNEPHIA FROM GUATEMALA (DIPTERA: SIMULIIDAE)

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Abstract: A new blackfly species, Mayacnephia tadai sp. nov. was described based on the female, pupal and larval specimens collected from a seasonal small stream in upland of Guatemala. This species is readily distinguished from the other known species by the number of pupal gill filaments (six).

Mayacnephia is a small genus of the family Simuliidae consisting of 10 species, most of which were reported from central America (Wygodzinsky and Coscarón, 1973). Recently we collected an additional species belonging to this genus from an upland stream in Guatemala which is easily separated from the known Mayacnephia species. This is described as a new species below. The taxonomic characters and their terminology used here follow those of Wygodzinsky and Coscarón (1973).

DESCRIPTION

Mayacnephia tadai Ochoa and Takaoka, new species

Female. Body length 3.0 mm. Head narrower than thorax. Frons dark brown, covered densely with whitish scale-like pubescence; frons (Fig. 1) narrow with frontal angle 60 degrees. Fronto-ocular areas (Fig. 1) well developed. Clypeus dark brown, covered densely with whitish scale-like pubescence, interspersed with several dark long hairs. Antenna consisting of 2 + 9 segments, dark brown; 1st flagellomere elongated, ca. 1.8 × length of 2nd flagellomere. Maxillary palp with 3rd segment (Fig. 2) of moderate size, subequal to or slightly longer than 4th segment; sensory vesicle (Fig. 2) oblong, ca. 0.43 × length of 3rd segment. Maxilla with 9 or 12 inner teeth and 13 or 14 outer teeth. Mandible with ca. 30 inner teeth and 12 outer ones. Cibarium unarmed. Thorax. Scutum dark brown, densely covered with recumbent whitish scale-like pubescence. Scutellum brown covered densely with whitish scale-like pubescence and with several dark upstanding hairs. Postscutellum dark brown, bare. Pleural membrane bare. Katepisternum glabrous, in profile as long as high, and bare. Wing lost. Legs also lost except for all coxae, fore femur and hind basitarsus; hind basitarsus (Fig. 3) nearly parallel-sided, brown, and with well developed calcipala. Abdomen. Basal scale dark brown with dark and pale hair fringe; dorsal surface of abdomen dark brown, densely covered with recumbent whitish scale-like pubescence; tergites of posterior segments semi-shiny. Terminalia (Figs. 4 and 5). Sternal plate of 7th abdominal segment well developed, large and with numerous hairs. Sternal plate of 8th segment well developed, widely bare medially but with ca. 12 hairs on each side; anterior gonapophyses large, subtriangular, apices rounded, medial borders approximated, surface with numerous microtrichia and with 15-18 setae. Genital fork inverted-Y shaped, stem and part of arms heavily sclerotized, and arms with distinct projection directed anterodorsally. Paraproct in ventral view slightly shorter than wide, and with ca. 9 dark hairs; in lateral view paraproct not produced posteriorly under cercus. Cercus in lateral view semicircular in shape, and with numerous hairs. Spermatheca large, well sclerotized except small circular membranous area at base of spermathecal duct, and without internal setae.

Pupa. Body length 4.0 mm. Head and thorax. Integument yellowish and moderately covered with minute tubercles. Head with 2 + 2 frontal and 1+1 facial trichomes; thorax with 5+5 trichomes, all simple and slender. Gill (Fig. 6) consisting of 6 tubular filaments in pairs; all filaments shortly stalked, subequal to each other in length and thickness, diverged widely and each

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Figure 1-11 *Macunephia tadai* sp. nov. 1, female head showing narrow frons; 2, 3rd segment of female maxillary palp showing sensory vesicle inside; 3, basitarsus of female hind leg; 4, female terminalia in situ (ventral view) showing 8th sternite, anterior gonapophyses, genital fork, paraproct, cercus and spermatheca; 5, paraproct and cercus in lateral view; 6, pupal gill filaments (lateral view); 7, terminal hook of pupal 9th abdomen (lateral view); 8, cephalic apotome and cervical sclerites of larval head; 9, ventral surface of larval head capsule showing hypostomium and shallow postgenal cleft; 10, apical tip of larval hypostomium; 11, apical tip of larval mandible. Scale bars, 0.2 mm for Figs. 1, 3, 8 and 9; 0.5 mm for Figs. 2, 4, 5, 6 and 10; 0.05 mm for Figs. 7 and 11.
with tapered apex; surface of filaments smooth. Abdomen. All terga tuberculate; terga III and IV each with 4+4 hooks posteriorly; all hooks simple; terga V-IX each with continuous spine-combs anteriorly; terminal hooks (Fig. 7) well developed and elongated. All sterna except last one tuberculate; sterna V I and V II divided longitudinally along middle by membraneous, striate area; sterna V - V II with 4+4, 3+3 and 2+2 simple hooks, respectively, accompanied by 2+2 hooks in pleural membranes; 9th segment ventrally and laterally with several curved, apically coiled hooks. Cocoon. small, short, slipper-shaped, rather loosely woven anteriorly, and covering the pupal abdomen alone.

Larva. Body length 6.5 mm. Body color pale yellow. Cephalic apotome (Fig. 8) broadest well before posterior border, and almost pale with posteromedian and posterolateral head spots yellow. Cervical sclerites (Fig. 8) small, narrowly fused to upper ends of postociput. Antenna as long as stem of cephalic fans; length ratio of 1st, 2nd and 3rd segment 1.0:0.85:1.1. Cephalic fan with 36 main rays. Mandible (Fig. 11) with numerous mandibular serrations. Hypostomium (Figs. 9 and 10) with 13 apical teeth in 3 conspicuous groups, with median tooth and corner teeth the largest; lateral borders weakly serrated anteriorly; hypostomial setae 4 in number, diverging posteriorly from lateral borders. Postgenal cleft (Fig. 9) small, ca. 3× length of postgenal bridge. Thoracic and abdominal cuticle bare except colorless simple setae at base of anal sclerite. Anal gill lobes simple. Anal sclerite X-formed, posterior arms ca. 1.8× as long as anterior arms. Ventral papillae present. Posterior circllet with ca. 76 rows of up to 18 hooklets per row.

Type specimens. Holotype, reared adult female mounted on glass slide, together with its associated pupal skin and cocoon, Rio Amates, Guanagazapa, Escuintla, GUATEMALA, 23. VI. 1986. J.O. Ochoa; paratypes, 1 pupa in alcohol and 1 larva on slide, same data and date as holotype. All these type specimens will be in due course deposited in the British Museum (Natural History), in London.

Ecological notes. These pupae and larva were collected together with M. aguirrei (Dalmat) from twigs in a small temporary stream (width 50 cm; water discharge 8 liters/sec.; altitude ca. 1,000 m above sea level). Female has the well developed, toothed mandibles and maxillae but its feeding habit is unknown.

Distribution. Guatemala.

Remarks. This new species was named after Dr. Isao Tada, professor of Kyushu University, Japan, in recognition of his great contribution of research and control of Guatemalan onchocerciasis.

The number of samples examined was small and even the unique female adult specimen reared from the pupa was not in a normal condition, missing the wings and most parts of legs. Nonetheless, this species was easily assigned to the genus Mayacnephia, defined by Wygodzinsky and Coscarón (1973), by a combination of the diagnostic characters of the pupa and larva, such as pupal cephalic sclerite with 2+2 frontal trichomes and tubular gill filaments, and larval hypostomium with 13 apical teeth in three groups.

This genus is mainly distributed in central America extending northerly to Canada and southerly to Venezuela and contains 10 species (Crosskey, 1988), all of which are so similar to one another in the adult and larval stages but differ remarkably in the pupal stage. The female and larva of the present new species also are very similar to those known species. However, the number and shape of the pupal gill filaments easily separate this species from the others.

From Guatemala, prior to this new species, three Mayacnephia species, namely M. aguirrei, M. paechocolunai (de Leon) and M. roblesi (de Leon), have been known, all of which have the differnt shapes of the pupal gills (Dalmat, 1955).

LITERATURES CITED
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