A New Species-group of the Genus *Colocasiomyia* de Meijere (Diptera: Drosophilidae), with Descriptions of Two New Species from Eastern Malaysia and Vietnam

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Abstract. A new species-group of the genus *Colocasiomyia* de Meijere is established, with descriptions of two new species, *C. nigricauda* Sultana & Toda, sp. nov. and *C. erythrocephala* Sultana & Yafuso, sp. nov., found from eastern Malaysia and Vietnam. Supplementary descriptions of three known species and a key to all species of this new species-group are also provided.

Key words: Araceae, *Homalomena*, inflorescence, key, known species, *Colocasiomyia toshikai* species-group.

Introduction

The genus *Colocasiomyia* de Meijere, 1914 is distributed from New Guinea to Sri Lanka (west) and to Ryukyu Islands (north) (Grimaldi, 1991). Adult flies of this genus are found exclusively in living fresh flowers, mostly of Araceae or of Arecaceae and Magnoliaceae, and breed on them so long as known (de Meijere, 1914; Carson & Okada, 1980; Toda & Okada, 1983; Honda-Yafuso, 1983; Okada, 1987; Okada & Yafuso, 1989; Yafuso & Okada, 1990; Yafuso, 1994; Yafuso et al., 2000). Up to the present, a total of 23 species have been described. Studying 20 species of them, Okada (1990) classified them into three species-groups, the *cristata*, the *baechlii* and the *arenge* groups, based on the result of a phenetic analysis. On the other hand, Grimaldi (1991) proposed a phylogenetic hypothesis based on the result of a cladistic analysis with a matrix of 22 adult morphological characters and 20 species, which was inconsistent with Okada’s classification. The *baechlii* species-group in particular was not monophyletic in Grimaldi’s (1991) cladogram. Instead, three species, *C. toshikai* (Okada, 1983), *C. xanthogaster* Yafuso & Okada, 1990 and *C. heterodonta* Yafuso & Okada, 1990, which were included in the *baechlii* group of Okada’s classification, formed a monophyletic group supported by four synapomorphies. Recently, two undescribed species that share not only the synapomorphies pointed out by Grimaldi (1991) but also several other synapomorphies with the three known species were found from eastern Malaysia and Vietnam. We establish here a new species-group comprising these five species, with descriptions of the two new species and supplementary descriptions for the three known species.

Materials and Methods

The specimens studied were preserved in 70% ethanol or dried and pinned. External morphology was observed under a stereoscopic dissecting microscope and metric characters were measured with an ocular micrometer. To observe the detailed structure of head, male legs and male and female terminalia, respective organs were detached from the body, cleansed by warming in 10% KOH solution around 100°C for several minutes, and observed in a droplet of glycerol under a compound light microscope. The dried, pinned specimens were softened by warming in 70% ethanol for several minutes before dissection. Drawings were made on the basis of microscope photo-
graphs taken by a digital camera. Ordinary and scanning electron microscope photographs were taken of some characters.

The examined specimens are deposited in the following institutions: Cuc Phuong National Park Museum, Vietnam (CPNP); Faculty of Agriculture, University of the Ryukyus, Okinawa, Japan (FAUR); Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia (ITBC); Kinabalu Park, Sabah Parks, Sabah, Malaysia (KSPS); Museum Zoologicum Bogoriense, Bogor, Indonesia (MZB); National Science Museum, Tokyo, Japan (NSMT); Systematic Entomology, The Hokkaido University Museum, Hokkaido University, Sapporo, Japan (SEHU).

Description

Characters seen in all species are first described as common characters of the species-group and are not referred to in the subsequent description of each species. The descriptions for known species are supplementary to the original, not repeating the descriptions of known characters except when correction is needed. We followed McAlpine (1981) for morphological terminology, Zhang & Toda (1992) for the definitions of measurements and indices (Table 1).

The Colocasiomyia toshikai species-group

Diagnosis. First flagellomere with large, hollow organ on proximal, inner margin (Fig. 1A). Palpus with hollow, sensory organ (Figs. 1B, C). Prementum laterally with a pair of spherical bumps covered with numerous, short, stout setae (Fig. 1C). Surstylus long, basoventrally fused to epandrium and basodorsally to cercus (Fig. 2). Cercus ventrally with conspicuous elongation curved posteriorly (Fig. 2). Aedeagus basally with a pair of strongly sclerotized processes (Figs. 3, 4). Oviscapt with peg-like, apically round ovisensilla; anteroventral bridge absent (Fig. 5).

Description ($\delta$ and $\varphi$). Head: Occiput, occular triangle and fronto-orbital plate glossy, usually dark brown. Supracervical setae tapered to apex, thin, apically curved and pointed. Dorsolateral arms of tentorial apodeme divergent; dorsomedial arm shorter than 1/2 of dorsolateral arm. Frontal vitiae anteriorly

<table>
<thead>
<tr>
<th>Table 1. Explanation of morphological measurements and indices.</th>
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<tbody>
<tr>
<td>BL straight distance from anterior edge of pedicel to tip of abdomen</td>
</tr>
<tr>
<td>ThL distance from anterior notal margin to apex of scutellum</td>
</tr>
<tr>
<td>WL distance from humeral cross vein to wing apex</td>
</tr>
<tr>
<td>WW maximum wing width</td>
</tr>
<tr>
<td>arb dorsal branches / ventral branches of arista</td>
</tr>
<tr>
<td>FW/HW frontal width / head width</td>
</tr>
<tr>
<td>ch/o maximum width of gena / maximum diameter of eye</td>
</tr>
<tr>
<td>prob proclinate orbital setae / posterior reclinate orbital setae in length</td>
</tr>
<tr>
<td>recorb anterior reclinate orbital setae / posterior reclinate orbital setae in length</td>
</tr>
<tr>
<td>vb subvibrissal seta / vibrissa in length</td>
</tr>
<tr>
<td>dcl anterior dorsoentral seta / posterior dorsocentral seta in length</td>
</tr>
<tr>
<td>presctl prescuteal seta / posterior dorsocentral seta in length</td>
</tr>
<tr>
<td>sctl basal scutellar seta / apical scutellar seta in length</td>
</tr>
<tr>
<td>sterno anterior katepisternal seta / posterior katepisternal seta in length</td>
</tr>
<tr>
<td>orbito distance between proclinate and posterior reclinate orbital setae / distance between inner vertical and posterior reclinate setae</td>
</tr>
<tr>
<td>dcp length distance between ipsilateral dorsocentral setae / cross distance between anterior dorsoentral setae</td>
</tr>
<tr>
<td>sculp distance between ipsilateral scutellar setae / cross distance between apical scutellar setae</td>
</tr>
<tr>
<td>C second costal section between subcostal break and R2,3 / third costal section between R3,3 and R4,5</td>
</tr>
<tr>
<td>4c third costal section between R2,3 and R4,5 , / M3 between r-m and dm-cu</td>
</tr>
<tr>
<td>4v M4 between dm-cu and wing margin , / M4 between r-m and dm-cu</td>
</tr>
<tr>
<td>5x CuA1 between dm-cu and wing margin , / dm-cu between M3 and CuA1</td>
</tr>
<tr>
<td>ac third costal section between R2,3 and R4,5 , / distance between distal ends of R4,5 and M3</td>
</tr>
<tr>
<td>M CuA1 between dm-cu and wing margin , / M3 between r-m and dm-cu</td>
</tr>
<tr>
<td>C3F length of heavy setation in third costal section , / (length of heavy setation in third costal section + length of light setation in third costal section)</td>
</tr>
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with several, minute, interfrontal setulae. First flagellaromere grayish yellow, with 1 small, internal organ (Fig. 1A). Facial carina highly elevated. Postgena grayish orange. Palpus with 1 prominent, terminal and several, short, subapical to lateromedian setae (Figs. 1B, C). Cibarium thickened on anterior margin, distinctly protruded at anterolateral corners; dorsal sclerite oval in dorsal view, nearly flat in lateral view; 4 anterior, cibarial sensilla, arranged in transverse row, situated before anterior margin of hypopharynx; medial and posterior, cibarial sensilla very long except for 2–3 most posterior sensilla; hypopharyngeal apodeme absent in anterior portion. Premenimum nearly flat in lateral view (Fig. 1C). Labellum short but very wide (Fig. 1C).

Thorax: Postpronotal lobe grayish brown. Single pair of prescutellar setae present. One small seta present just below anterior, katepisternal seta.

Wings: Veins grayish yellow; crossveins not clouded; bm-cu crossvein absent; R_{2+3} nearly straight; R_{4+5} and M_{1} nearly parallel. Single C_{1} seta. Halter grayish yellow; basal and anterodorsal parts of knob darker than other parts.

Legs with preapical, dorsal seta on every tibia and apical seta on mid tibia. Mid and hind tarsi each with a row of cuneiform setulae along anteroventral ridge.

Male terminalia (Figs. 2–4): Epandrium, antero-ventral corner narrowly elongated below. Cercus with pubescence except for ventral part, articulated with medial node on epandrial, caudal margin. Membrane between epandrium and cercus with pubescence dorsomedially. Hypandrium as narrow as aedeagal apodeme, without paramedian setae and pubescence, mediolaterally articulated with apex of ventral elongation of epandrium, posteriorly bifurcated. Aedeagus strongly curved ventrad, sclerotized on inner margin, articulated with aedeagal apodeme; distiphallus flexible, membranous; aedeagal apodeme rod-shaped, with short but broad, aedeagal guide.

Remarks. Toda et al. (in press) redefined the Okada’s (1990) baechlii group as comprising two known species, C. baechlii (Okada, 1986) and C. bogneri (Okada, 1986), and 12 undescribed species found from Sabah in Borneo. Relationships among the toshiokai group, the revised baechlii group and a few others having been included in Okada’s (1990) baechlii group will be dealt with elsewhere in a more comprehensive study on the phylogeny of the whole Colocasiomyia.

Colocasiomyia toshiokai (Okada)
(Figs. 2A, 3A, B, 5A)
Diagnosis. Surstylus sinuated, as thin as, but longer than ventral elongation of cercus (Fig. 2A). Oviscapt with patch of pubescence (Fig. 5A).

Description (♂ and ♀). Head: Supracervical and postocular setae 4–5 and 16–17 per side, respectively. Space between antennal sockets narrower than half of socket width; arista with 1 or 2 ventral branches. Facial carina as long as pedicel and 1st flagellomere combined, about half as broad as 1st flagellomere. Hollow, sensory organ of palpus rudimentary, small, shallow. Medial and posterior, cibarial sensilla 3–4 and 4–5 per side, respectively. Labellum with 11 pseudotracheae.


Legs: Foreleg 2nd tarsomere apically with 3 stout, black spines slightly shorter than 3rd and 4th tarsomeres combined.

Male terminalia (Figs. 2A, 3A, B): Epandrium with pubescence except for anterior margin and ventral portion, bearing 7–8 setae near dorsal to lateral margin and 4 setae near base of surstylus. Surstylus rounded at apex, with 4 minute setulae submedially to apically. Cercus with 14–15 setae; ventral elongation with about 4 minute setulae on ventrosupabical to apical margin. Hypandrium apically fused to parameres. Paramere about 2/3 as long as aedeagus, strongly curved ventrad, tapering distally, apically round and bearing 2 minute sensilla. Aedeagus tapering distally, truncate at apex; distiphallus protruding like long tube from dorsosupabical portion of aedeagus; aedeagal apodeme as long as aedeagus.

Female terminalia: Oviscapt (Fig. 5A) with 1–2 peg-like, apically round ovisensilla near medial, ventral margin, 1 pointed, lateral ovisensillum on subapical, mesal surface, and 4 and 1 long setae on apical, large and small projections, respectively.

Measurements: ThL = 0.59–0.62 mm (in ♂), 0.69–0.75 mm (in ♀); WL = 1.15–1.18 mm (♂), 1.28–1.32 mm (♀); WW = 0.52–0.54 mm (♂), 0.56–0.59 mm (♀).

Indices: FW/HW = 0.56–0.59, orbito = 0.75–1.00.


Remarks. Okada described, “... second tarsal joint of fore leg apically with 2 long stout unequal black bristle, ... Ovipositor (Fig. 3-H) ... apically pointed and segmented” (Toda & Okada, 1983). Examining the type specimens, however, we confirmed that the second tarsomere of foreleg bears three spines at apex and that the oviscapt is apically not segmented but protruded (Fig. 5A) as described above. Moreover, Okada noted in the original description that this species was collected from an inflorescence of Colocasia esculenta (Linnaeus) Schott, but later corrected the host plant name as Homalomena sp. based on the information from the collector, Dr. S. Toshioka (Okada, 1986).

Colocasiomyia xanthogaster Yafuso & Okada
(Figs. 1D, 2B, 3C, D, 5B)


Diagnosis. Additional pair of dorsocentral setae present before transverse suture, about 2/3 as long as anterior dorsocentrals. Abdominal tergites yellow. Surstylus strongly curved downward, rounded at apex (Fig. 2B). Aedeagus apically narrow and clawed (Fig. 3C).

Description (♂ and ♀). Head: Supracervical and postocular setae 2–3 and 11–14 per side, respectively. Frontal vittae mat, orange gray. Space between antennal sockets broader than half of socket width; pedicel orange yellow; arista with 1 or 2 ventral branches. Facial carina prominently raised on lower margin, as long as pedicel and 1st flagellomere combined, only slightly narrower than 1st flagellomere. Gena grayish orange, anteriorly darker. Palpus grayish brown. Medial and posterior, cibarial sensilla 6 and 4 per side, respectively. Labellum with 17–18 pseudotracheae.


Legs: Foreleg 2nd tarsomere with 3 stout spines slightly shorter than 3rd and 4th tarsomeres combined (Fig. 1D).

Abdomen: Sternites pale yellow.

Male terminalia (Figs. 2B, 3C, D): Epandrium pubescent except for anterior margin and ventral portion, with 4–6 setae near dorsal to lateral margin and 4–6 setae near base of surstylus. Surstylus as long as, but broader than ventral elongation of cercus, with 2–3 upright, claw-like prensietae and 1–2 minute setulae apically and 1 small seta on ventrosupabical margin. Cercus with 18 setae; ventral elongation with 4 minute setulae at apex. Hypandrium apically fused.
to parameres. Paramere about half as long as aedeagus, nearly straight, gradually narrowing distally, apically round and with 4 minute sensilla. Distiphallus protruding like long tube from dorsosubapical portion of aedeagus; aedeagal apodeme slightly longer than aedeagus.

Female terminalia: Oviscapt (Fig. 5B) with 1–2 peg-like, apically round ovisensilla near submedial, ventral margin, 1 pointed, lateral ovisensillum on subapical, mesal surface, 4 long setae on large, apical projection and 1 long seta at dorsosubapical corner.

Measurements: ThL = 0.69–0.85 mm (in 5♂), 0.66–0.89 mm (in 4♀); WL = 1.65–1.81 mm (♂), 1.71–1.98 mm (♀); WW = 0.75–0.85 mm (♂), 0.72–0.85 mm (♀).

Indices: FW/HW = 0.55–0.67, probr = 0.60–0.84, orbito = 0.57–0.83, dcp = 0.82–1.00, sectp = 1.22–1.42.

Specimens examined. Indonesia: Bogor, Java, 3.XI.1988, 1♂ (holotype), 1♀ (allotype), ex florescence of Homalomena sp., leg. M. Yafuso (NSMT); 1♀ (paratype), ex florescence of Homalomena pendula (Bl.) Bakh. f., 1♀ (paratype), ex florescence of Aglaonema pictum (Roxb.) Kunth (NSMT); 5♂, 3♀, 27.XII.1999, ex florescence of Aglaonema infoglium Schott (MZB: 2♂, 1♀; FAUR: 1♂, 1♀; SEHU: 2♂, 1♀).

Remarks. Yafuso & Okada (1990) did not illustrate the caudoventral elongation of cercus in their Fig. 2D. Examining the type specimens, however, we confirmed the presence of such an elongation also in this species as shown in Fig. 2B.

Colocasiomyia nigricauda Sultana & Toda, sp. nov.
(Figs. 1A, E, 2C, 3E, F, 5C)

Diagnosis. Additional pair of dorsocentral setae present before transverse suture, about 3/4 as long as anterior dorsocentrals. Abdominal tergites nearly entirely dark brown to black, except for yellow, narrow, anterior margin and small, anteromedian portion of each tergite. Surstylus gently curved downward, apically triangular (Fig. 2C). Aedeagus shaped like thick claw apically (Fig. 3E).

Description (♂ and ♀). Head: Eye brownish red,
with sparse setulae. Supracervical and postocular setae 2–5 and 11–13 per side, respectively. Frontal vitta mat, orange gray. Space between antennal sockets broader than half of socket width; pedicel orange yellow; arista with 2 dorsal and 1 ventral branches and small terminal fork (Fig. 1A). Face grayish yellow; carina prominently raised on lower margin, as long as pedicel and 1st flagellomere combined, only slightly narrower than 1st flagellomere. Gena grayish orange, with large, brown patch anteriorly. Palpus grayish brown. Clypeus grayish orange. Medial and posterior, cibarial sensilla 4–7 and 4–8 per side, respectively. Labellum with 14–16 pseudotracheae.


Wing hyaline, apically somewhat fuscous. Costal vein anteriorly with stout, densely arranged setulae only.

Legs pale yellow, except for dark gray, terminal tarsomeres. Foreleg 2nd tarsomere with 3 stout spines slightly longer than 3rd and 4th tarsomeres combined (Fig. 1E). Fore-, mid- and hindleg 1st tarsomeres as long as 2, 4 and 3 succeeding tarsomeres combined, respectively.

Abdomen: Tergites glossy. Sternites pale grayish brown.

Male terminalia (Figs. 2C, 3E, F): Epandrium with pubescence except for anterior margin and ventral portion, bearing 3–4 setae near dorsal to lateral margin and 3–4 setae near base of surstylus. Surstylus as long and broad as ventral elongation of cercus, with 2 upright, claw-like presiselate and 1 minute setula apically and 1 minute setula on ventrosubapical margin. Cercus with 17–22 setae; ventral elongation with 3–4 minute setulae at apex. Hypandrium apically fused to paramere. Paramere about 2/3 as long as aedeagus, nearly straight, gradually narrowing distally, slightly pubescent on basal, inner surface, apically pointed, with 3–4 sensilla arranged linearly on subapical to apical portion. Distiphallus protruding like long tube from dorsosubapical portion of aede-
A New Species-group of Colocasimyia

agus; aedeagal apodeme slightly longer than aedeagus.

Female terminalia: Oviscap (Fig. 5C) with 2–3 peg-like, apically round ovisensilla on subapical, ventral margin to subapical, mesal surface, 1 apically pointed, lateral ovisensillum on dorsosubapical, mesal surface, 4 long setae on large, apical projection and 1 similar at dorsosubapical corner.

Measurements: BL = 2.37 mm in holotype (range in 5♂ and 8♀ paratypes: 2.24–2.57 in ♂, 2.31–3.00 in ♀); ThL = 0.82 mm (0.72–0.85 in ♂, 0.85–0.95 in ♀); WL = 1.68 mm (1.58–1.71 in ♂, 1.65–1.88 in ♀); WW = 0.75 mm (0.66–0.85 in ♂, 0.72–0.89 in ♀).

Indices: arb = 2/1 (2/1), FW/HW = 0.57 (0.55–0.68), ch/o = 0.56 (0.34–0.56), probrb = 0.86 (0.62–0.88), rcorrb = 0.13 (0.09–0.25), vb = 0.22 (0.13–0.28), dd1 = 0.66 (0.63–0.87), scet1 = 0.70 (0.52–0.72), sterno = 0.66 (0.46–0.78), orbital = 0.71 (0.33–0.71), decp = 0.82 (1.00–1.15), setlp = 1.00 (1.00–1.15), C = 1.83 (1.94–2.13), 4c = 1.19 (1.09–1.25), 4v = 1.64 (1.48–1.78), 5x = 2.00 (1.45–1.88), ac = 3.36 (2.69–3.00), M = 0.60 (0.48–0.62), C3F = 0.16 (0.11–0.17).


Distribution. Malaysia (Sabah).

Remarks. This species is most similar to C. xanthogaster in having the additional pair of dorsocentral setae, the straight paramere and the apically clawed aedeagus, but distinguished from it by the diagnostic characters (in C. xanthogaster: abdominal tergites mostly yellow; surstylius apically round; aedeagus apically narrow).

Etymology. Referring to the mostly black abdomen.

Colocasimyia erythrocephala Sultana & Yafuso, sp. nov.

(Figs. 2D, 4A, B, 5D)

Diagnosis. Foreleg 2nd tarsomere apically with 3

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Fig. 4. Phallic organs in lateral view (A, C), and hypandrium and parameres in ventral view (B, D). A, B, Colocasimyia erythrocephala Sultana & Yafuso, sp. nov. ♂ (a paratype from Cuc Phuong, Vietnam); C, D, Colocasimyia heterodonta Yafuso & Okada ♂ (from Poring, Mt. Kinabalu, Sabah, Malaysia). Scale = 0.1 mm.
stout spines slightly longer than 3rd and 4th tarsomeres combined. Surstylus straight, as long as but slightly broader than ventral elongation of cercus, rounded at apex (Fig. 2D). Aedeagus broad, apically thick and rounded, with beak-like projection between a pair of strongly sclerotized, basal processes (Fig. 4A).

**Description (♂ and ♀).** Head: Eye purple red, with sparse setulae. Ocellar triangle grayish brown. Supraneovitit and postocular setae 4-5 and 11-13 per side, respectively. Frontal vittae orange gray. Space between antennal sockets narrower than half of socket width; pedicel orange yellow; arista with 2 dorsal and 2 ventral branches and small, terminal fork. Face grayish yellow; carina as long as pedicel and 1st flagellomere combined, only slightly narrower than 1st flagellomere. Palpus grayish brown. Clypeus grayish orange. Medial and posterior, cibarial sensilla 2-4 and 3 per side, respectively. Labellum with 13-16 pseudotracheae.


Wing: Costal vein anteriorly with stout, densely arranged setulae only.

Legs grayish yellow, except for dark gray coxae, femora and tibia of mid- and hindlegs.

Abdomen: Tergites glossy, nearly entirely yellowish brown to dark brown. Stermites yellowish brown.

Male terminalia (Figs. 2D, 4A, B): Epandrium pubescent allover, with 4 setae near dorsal to lateral margin and 4 setae near base of surstylus. Surstylus with 1 upright, claw-like prensiseta and 2 minute setulae apically and 2 small setae on subapical to proximal, ventral margin. Cercus with 25 setae; ventral elongation with 5 minute setulae at caudoventral apex and 1 small seta on mesal surface. Hypandrium apically fused to paramere. Paramere about 2/3 as long as aedeagus, nearly straight, pubescent on basal, inner surface, gradually narrowing distally, apically pointed, with 4-5 sensilla arranged linearly on subapical to apical portion. Distiphallus very short; aedeagal apodeme slightly longer than aedeagus.

Female terminalia: Oviscapt (Figs. 5D) with 2 peg-like, apically round ovisensillum on subapical, ventral margin to subapical, mesal surface, 1 pointed, lateral ovisensillum on dorsosubapical, mesal surface, 3 long and 1 small setae on large, apical projection and 1 long seta on small projection at dorsosubapical corner.

Measurements: BL = 2.01 mm in holotype (range in 9♂ and 8♀ paratypes: 1.48–2.11 in ♂, 1.98–2.17 in ♀).
Colocasiomyia heterodonta Yafuso & Okada, 1990
(Figs. 1B, C, F, 2E, 4C, D, 5E)

Colocasiomyia heterodonta Yafuso & Okada, 1990: 140.

Diagnosis. Foreleg 2nd tarsomere with 1 long, stout spine apically and many small, tooth-like ones arranged in irregular rows (Fig. 1F). Paramere gently sinuuated, broadened distally, truncate apically (Figs. 4C, D). Aedeagus about half as long as aedeagal apodeme (Fig. 4C). Oviscapt apically tapering, without distinct projection (Fig. 5E).

Description (♂ and ♀). Head: Eye with sparse setulae. Supracervical and postocular setae 1–2 and 10–14 per side, respectively. Frontal vitellae mat, orange gray. Space between antennal sockets broader than half of socket width; pedicel orange yellow; arista with 3–4 dorsal and 2 ventral branches. Facial carina slightly shorter than pedicel and 1st flagellomere combined, only slightly narrower than 1st flagellomere. Gena grayish brown. Palpus grayish brown. Median and posterior, cibarial sensilla 3 and 3–5 per side, respectively. Labelium with 11 pseudotracheae.


Abdomen: Sternites grayish yellow.

Male terminalia (Figs. 2E, 4C, D): Epandrium pubescent except for anterior margin and ventral portion, with 2–7 setae near dorsal to lateral margin and 8–12 setae near base of surstylus. Surstylus gently curved downward, truncate at tip, as long as, but broader than ventral elongation of cercus, with 2 upright, claw-like prensisetae and 1 minute setula apically and 3 small setae on medial to proximal, ventral margin. Cercus with 26–32 setae; ventral elongation with 4 minute setulae at hooked apex and 1–2 long setae proximally. Hypandrium apically articulated with paramere. Paramere basally articulated with aedeagal guide, about half as long as aedeagus, with 6 minute sensilla apically. Aedeagus basally with strongly sclerotized, beak-like projection; distiphallus very short.

Female terminalia: Oviscapt (Fig. 5E) with 2–3 peg-like, apically round ovisensilla near submedial, ventral margin and 4 long setae apically.

Measurements: ThL = 0.75–0.92 mm (in ♂♂), 0.79–0.95 mm (in ♀♀); WL = 1.51–1.81 mm (♂♂), 1.65–1.88 mm (♀♀); WW = 0.72–0.82 mm (♂♂), 0.75–0.89 mm (♀♀).

Indices: FW/HW = 0.60–0.74, prob = 0.55–0.78, orbito = 0.50–0.78, dctp = 0.83–1.00, scctlp = 1.00–1.25.

Specimens examined. Indonesia: Bogor, Java, 3.XI. 1988, 1♂ (holotype), 1♀ (allotype), ex inflorescence of Homalomena sp., leg. M. Yafuso (NSMT); 1♂ (paratype), ex inflorescence of H. pendula; 1♂ (paratype), ex inflorescence of A. pictum (NSMT); 8♂♂, 5♀♀, 27. XII. 1999, ex inflorescence of A. infogillum (MZB: 3♂♂, 2♀♀; FAUR: 2♂♂, 1♀♀; SEHU: 3♂♂, 1♂♂). Malaysia: 4♂♂, 2♀♀, Poring, Mt. Kinabalu, Sabah, 11.III.2000, ex inflorescence of H. sagittifolia; 1♀♀, Ulu Senagang, Crocker Range, Sabah, 18.X.1999, ex inflorescence of H. sagittifolia (KSPS: 2♂♂, 1♀♀; ITBC: 1♂♂, 1♀♀; SEHU: 1♂♂, 1♀♀).

Remarks. This species is unique in the dentition on the second tarsomere of foreleg among the members of the toshiokai group, but somewhat similar to the foregoing species, C. erythrocephala, in having the beak-like projection at the base of aedeagus and the broader surstylus. Yafuso & Okada (1990) did not illustrate the surstylus in their Fig. 2I, although they described that the surstylus is triangular in shape. Examining the type specimens, however, we confirmed the surstylus to be the process elongated and gently curved downward from the caudoventral corner of epandrium as shown in Fig. 2E.
Key to Species of the *C. toshiokai* Species-group

1. Foreleg 2nd tarsome with 3 long, stout spines apically. ........................................... 2
   - Foreleg 2nd tarsome with 1 long, stout spine apically and many small, tooth-like spines arranged in irregular rows. .......................................................... C. heterodonta Yafuso & Okada

2. Additional pair of dorcocentral setae present...3
   - Additional pair of dorcocentral setae absent...4

3. Abdominal tergites mostly yellow; surstylus rounded at apex; paramere about 1/2 as long as aedeagus; aedeagus apically narrow. ........................................... C. xanthogaster Yafuso & Okada
   - Abdominal tergites mostly dark brown to black; surstylus triangularly pointed at apex; paramere about 2/3 as long as aedeagus; aedeagus apically broad. C. nigrocauda Sultana & Toda, sp. nov.

4. Three stout spines on foreleg 2nd tarsosome slightly shorter than 3rd and 4th tarsomeres combined; anterior, dorcocentral setae situated just beside transverse suture; surstylus and ventral elongation of cercus narrower than ventral elongation of epandrium; aedeagus without beak-like projection basally; oviscapt with small patch of pubescence. ........................................... C. toshiokai (Okada)
   - Three stout spines on foreleg 2nd tarsosome slightly longer than 3rd and 4th tarsomeres combined; anterior, dorcocentral setae behind transverse suture; surstylus and ventral elongation of cercus broader than ventral elongation of epandrium; aedeagus with beak-like projection basally; oviscapt without pubescence. .... C. erythrocephala Sultana & Yafuso, sp. nov.

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References


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