

Two new species of *Holorusia* Loew (Diptera: Tipulidae) from Vanua Levu, Fiji

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Abstract: Two new species of *Holorusia* Loew: *H. tabogo*, n. sp. and *H. vanua*, n. sp. are described and illustrated from Vanua Levu, Fiji. A total of ten species are now known to occur in the Fiji islands.

INTRODUCTION

There are currently 115 known species belonging to genus *Holorusia* in the world fauna (Oosterbroek 2008). The highest diversity is met in Australasian–Oceanian, Oriental, and Afrotropical Regions, few species are known from eastern Palaearctic and one from the Nearctic Region. *Holorusia* is the only genus of Tipulidae crane flies found in Fiji islands. All knowledge of the genus in these islands was synthesized by Evenhuis (2006). Since then, new material has accumulated, especially from Vanua Levu. Upon examination, two new species were discovered, which are described and illustrated here.

MATERIAL AND METHODS

The material examined in this study derives primarily from specimens collected under the auspices of the NSF-funded “Fiji Arthropods Survey” and the Schlinger Foundation-funded Fiji Biodiversity of Arthropods study, primary types of which will be deposited in the Fiji National Insect Collection, Suva (FNIC) and the Bishop Museum, Honolulu (BPBM).

Descriptive terminology, especially that of wing venation, follows that used in Evenhuis (2006).

SYSTEMATICS

Holorusia tabogo Podenas & Evenhuis, new species (Figs. 1–5)

Diagnosis. *Holorusia tabogo* appears closest to *H. damuda* Evenhuis, 2006 and *H. walk-eriana* (Alexander, 1924), but can be separated from them by peculiarities of wing venation and patterning as well as structure of male hypopygium. *H. tabogo* has distinct brown

stigma as *H. damuda* (stigma is pale brown in *H. walkeriana*), but petiole of vein M_{1+2} is shorter than cell m_1 , like in *H. walkeriana* (petiole of vein M_{1+2} is longer than cell m_1 in *H. damuda*). Vein R_3 of *H. tabogo* is just slightly arcuated, like in *H. damuda*, when this vein is strongly arched, thus making cell r_{1+2} very wide in *H. walkeriana*. Darkening along the cord in *H. tabogo* is affected by effaced area just at the base of discal cell, when darkening is bleached also along basal deflection of R_{4+5} and $r-m$ in *H. damuda*. Ninth male tergite of *H. tabogo* is hemispherical like in *H. damuda* (this tergite is subquadrate in *H. walkeriana*). *H. tabogo* is the only Fijian species having posterior margin of ninth tergite extended posteriorly, when all other species have posterior margin of ninth tergite emarginated.

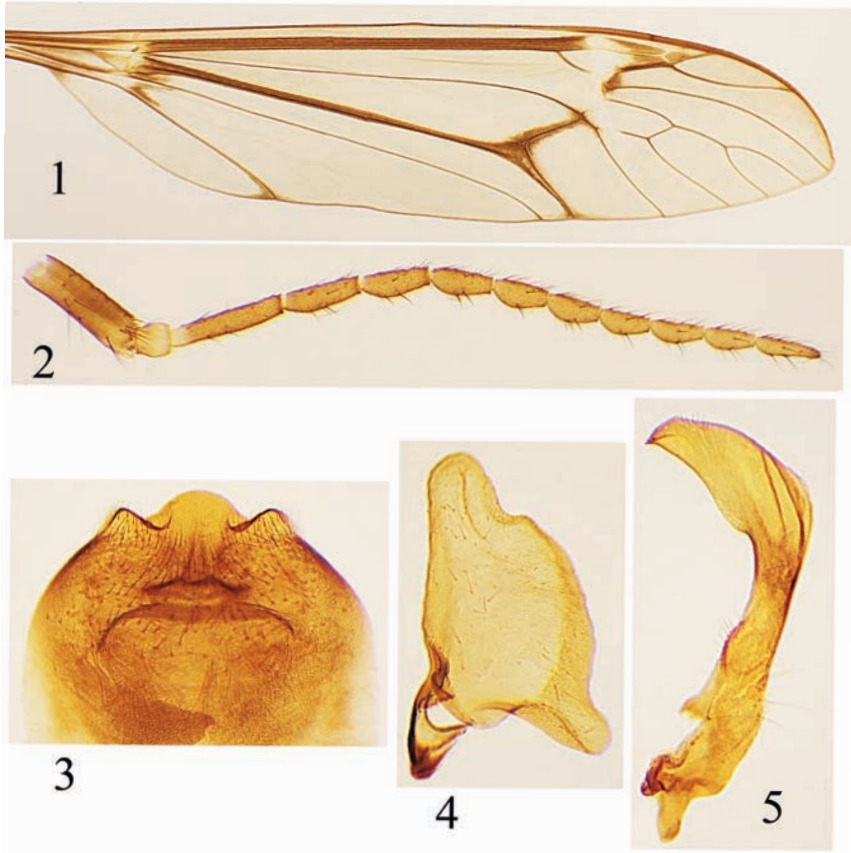
Description. Length: Body: 15.5–17.5 mm; wing: 16.8–18.7 mm. **Male.** *Head.* Rostrum yellow dorsally and dorsolaterally, brownish ventrally and ventrolaterally; nasus distinct, brownish yellow in lighter specimens, dark brown in darker specimens, blackened at extreme tip, subequal in length to second flagellomere. Occiput brownish, orange yellow laterally, with short sparse brownish hairs. Palpus greyish brown with extreme bases and apices of second and third palpomere whitish yellow, extreme tip of last palpomere dark brown. Antenna (Fig. 2) 12-segmented, apex of scape, whole pedicel and base of first flagellomere whitish yellow, remainder of antennal segments yellowish brown; apicalmost flagellomere longer than penultimate one.

Thorax. Pronotum light brown, spotted with dark brown laterally. Prescutum brownish yellow with three dark brown stripes; median stripe extending almost to transverse suture, with yellowish median vitta; lateral pair shorter, extending from just posterior to pseudosutural fovea to transverse suture. Scutum brownish yellow with paired brown spots, frontal margin of anterior spot dark brown. Scutellum light brown with dark brown posterior margin and nearly indistinct central darkened spot. Pleura predominantly brownish-greyish yellow with dark brown patch on dorsal part of anepimeron; anepisternum just slightly stained with brownish; katepisternum and meron brown ventrally. Metatergite brownish yellow, dark brown posterolaterally. Halter with stem and knob yellowish brown.

Legs. Coxae brownish dorsally, yellow ventrally, yellow haired; fore and mid trochanters brownish, hind trochanter yellow. Basal two thirds of femora brownish, lighter proximally, turning slightly darker distally; distal one third of femora divided into two subequal rings – whitish yellow basal and dark brown distal. Base of tibiae whitish yellow, remainder brown, extreme apex dark brown. Tarsal segments brown with darker apices.

Wing (Fig. 1). Subhyaline, pale yellowish brown; veins brown; stigma brown with veins in stigmal area discoloured. Effaced areas of veins and associated cells include: end of Sc , apical half of Rs , basal deflection of M_{1+2} and basal part of M_3 . Brown infuscation of cells sc and cup , along basal portion of vein R_{4+5} , crossvein $r-m$, along basal portion of vein CuA_1 and at apex of vein A_2 . Vein R_3 just slightly arcuate, thus cell r_{1+2} comparatively narrow. Petiole of cell m_1 (vein M_{1+2} at base of cell m_1) shorter than cell m_1 . Cell cup narrowly open in wing margin.

Abdomen. Tergite I brownish with yellowish central part and posterior margin; tergite II predominantly yellow with brown spots on distal end; tergite III yellowish brown with three longitudinal brown stripes (central and two lateral); tergites IV–VII brown; tergites VIII–IX dark brown. Sternites I–V predominantly yellow, with dim patches of brownish, sternite VI brown, sternites VII–VIII dark brown.



Figures 1–5. *Holorusia tabogo*, n. sp. 1. Wing. 2. Antenna. 3. Tergite IX. 4. Outer gonostyle. 5. Inner gonostyle.

Male hypopygium (Figs. 3–5). Tergite IX hemispherical, posterolateral angles extended caudad and forming nearly equilateral triangles; posterior margin between these triangles widely rounded and extended further caudad than apices of posterolateral angles. Outer gonostyle broad basally, finely hirsute, bearing extended rounded lobe at posteroventral angle and small subapicoposterior emargination. Inner gonostyle with beaklike apical portion, a few minute hairs subapicodorsally, arm slender, lateral surface from beak to middle of arm with three strong reddish ridges, base swollen with brownish hairs.

Female. Generally as in male, but somewhat lighter, especially abdomen, general coloration of which yellow slightly stained with brownish. Tergites I–II yellow, III–V brownish yellow, distal tergites yellow, tergites II–VIII with dark posterior margins, I–VII with whitish lateral margins. Basal sternite brownish, remainder sternites predominantly yellow, sternite II with longitudinal brownish spot which reaches approximately one third of segment's length, sternites II–VII with darkened posterior and whitened lateral mar-

gins. Sternite VIII yellow, slightly stained with brownish, length about 1.5 times width, bilobed and deeply emarginated medially, each lobe sharply rounded; hypovalve whitish at base, brownish distally. Cerci yellow.

Types. Holotype ♂ from FIJI: **Vanua Levu:** 0.6 km S Rokosalase Village, 150 m, 16.533°S 179.018°E, 26 Mar–9 Apr 2004, Malaise, M. Tokota'a, I. Sakealevu [FBA 184172]. *Paratypes:* topotypic 6♂, 2♀ [FBA 184171 – specimens in ethanol; FBA 184186, 184187, 184188, 184189 slide mounted fragments: wings and separate details of male hypopygium of same specimens]; 1♂, 1♀, Rokosalase, 105 m, 179°01'14.7"E, 16°31'89.1"S, 26 Mar–9 Apr 2004, Malaise in forest, M. Irwin, E. Schlinger, M. Tokota'a (BPBM); 1♂, 0.5 km S. Rokosalase Village, 97 m, 16.532°S, 179.919°E, 14–31 Aug 2004, I. Sakealevu [FBA 501176] (BPBM); 1♂, 1♀, same but 14–28 Sep 2004 [FBA 501149–501150] (BPBM). Holotype to be deposited in FNIC. Paratypes in FNIC and BPBM.

Etymology. The species epithet derives from the Fijian *tabogo* = “hidden”, referring to the fact it was not discovered until after the junior author’s paper covering all Fijian *Holorusia* (Evenhuis 2006) was published.

Distribution. Known only from north central Vanua Levu.

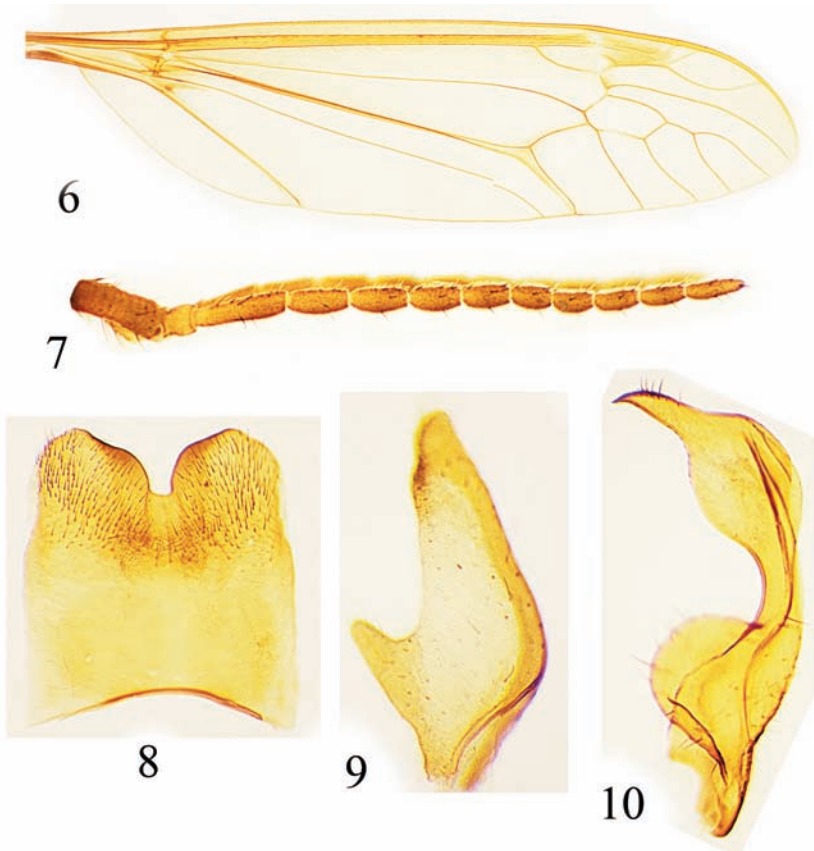
Holorusia vanua Podenas & Evenhuis, new species

(Figs. 6–10)

Diagnosis. *H. vanua* has pale wing coloration and venation peculiarities which more resemble that of *H. walkeriana*, just discal and m1 cells of *H. vanua* are wider than in *H. walkeriana*. Judging from structure of male hypopygium *Holorusia vanua* appears closest to *H. damuda* and *H. fijiensis* (Alexander), but can be separated from them by peculiarities of wing venation and patterning as well as structure of male hypopygium. Ninth tergite of *H. vanua* is emarginated medially like in *H. damuda* and *H. fijiensis*, but general appearance of *H. vanua* tergite is between these two species, it is generally subquadrate as in *H. fijiensis*, but with rounded posterolateral lobes as in *H. damuda*. Outer gonostyle of all these three species is similar and differs from other local species by extended posteroventral lobe. Similar, but more extended lobe is present in *H. mamare* Evenhuis making whole gonostyle bifid. Inner gonostyle of these species is also similar, resembling bird head, but *H. vanua* could be separated by strongly swollen basal part (“craw”), which is unique among local species.

Description. Length: Body: 13.5 mm; wing: 17.0 mm. **Male.** *Head.* Rostrum generally yellow just slightly darkened ventrally and ventrolaterally; nasus distinct, blackened at extreme tip, subequal in length to second flagellomere. Gena with brownish spot. Occiput yellow, with short sparse brownish hairs. Basal palpomere brownish yellow, successive palpomeres greyish yellow with whitish joints, extreme tip of last palpomere brown. Antenna (Fig. 7) 12-segmented, evenly yellow, apicalmost flagellomere longer than penultimate one.

Thorax. Whole thorax yellow, just prescutum with three rusty brown stripes; median stripe ending before transverse suture, with darker median vitta; lateral pair shorter, extending from just posterior to pseudosutural fovea to transverse suture. Scutum yellow with paired brownish spots. Scutellum brownish with narrow darker medial line. Pleura yellow without any dark spots or stripes. Metatergite yellow, brownish posterolaterally, with very weak remnants of medial line posteriorly. Halter with stem and knob brownish yellow.



Figures 6–10. *Holorusia vanua*, n. sp. 6. Wing. 7. Antenna. 8. Tergite IX. 9. Outer gonostyle. 10. Inner gonostyle.

Legs. All legs yellow with apices of all segments slightly infuscated with brownish.

Wing (Fig. 6). Subhyaline, pale yellowish; veins yellowish brown; stigma light brown. End of Sc, and R at end of Sc are effaced; apex of Rs, basal part of R_{1+2+3} , basal deflection of M_{1+2} and basal part of M_3 just little paler than surrounding veins. Cell sc entirely brownish, membrane surrounding basal deflections of R_{4+5} and CuA_1 as well as proximal part of cell a1 slightly infuscated with brownish. Vein R_3 strongly arcuate, thus cell r1+2 wide. Petiole of cell m1 (vein M_{1+2} at base of cell m1) much shorter than cell m1. Cell cup narrowly open in wing margin, it is approximately as wide as cell r4+5.

Abdomen. Generally yellow, VII–VIII segments and IX tergite orange yellow, IX sternite brown with orange base.

Male hypopygium (Figs. 8–10). Tergite IX subquadrate, deeply emarginated medially, posterolateral lobes widely rounded and blunt apexed; posterior margin darkened and very finely serrated. Outer gonostyle comparatively narrow, broader basally turning narrower distally, apex bluntly rounded, finely hirsute, bearing extended triangle-shaped,

blunt-apexed lobe at posteroventral angle. Inner gonostyle resembles bird head, beaklike apical portion with a few dorsal setae, “neck” slender, lateral surface from beak to middle of “neck” with four strong reddish ridges (just three ridges are seen in precisely lateral view), base (“craw”) strongly swollen with brownish hairs.

Female unknown.

Types. Holotype ♂ from FIJI: **Vanua Levu:** 0.6 km S Rokosalase village, 150 m, 16.533°S 179.018°E, 26 Mar–9 Apr 2004, Malaise, M. Tokota’a, I. Sakealevu [FBA 184170 – slide mounted wing and hypopygium; remaining body in ethanol]. Holotype to be deposited in FNIC.

Etymology. The species epithet derives from the island name Vanua Levu.

Distribution. Known only from north central Vanua Levu.

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