

Revision of Fijian *Tomosvaryella* Aczél (Diptera: Pipunculidae)

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Abstract: The Fijian species of *Tomosvaryella* Aczél, 1939 are revised and include three new species: *T. cagiae* n. sp., *T. corusca* n. sp. and *T. moala* n. sp. Keys to Fijian Pipunculidae genera and to *Tomosvaryella* species are provided and diagnostic characters, including male and female genitalia, are illustrated.

INTRODUCTION

This is the second in a series of papers that ultimately aims to document the diversity of all Fijian Pipunculidae. The first paper documented the taxonomy and phylogeny of *Collinias* Aczél, 1940 (Skevington, 2006). Until the recent inventory of Fijian invertebrates, *Collinias vitiensis* Muir, 1906, was the sole representative of the Fijian pipunculid fauna (named from two pipunculid specimens). From recent collecting efforts, we now know that over 25 species in seven genera (see the key below) are supported by a collection of 2129 specimens (Skevington, unpubl. data). The bulk of the family's diversity occurs in the genus *Clistoabdominalis* and almost all Fijian pipunculid species are endemic.

Tomosvaryella is a diverse, globally distributed pipunculid genus containing 271 described species (De Meyer, 1996; De Meyer & Skevington, 2000). As far as is known from the few available rearing records, *Tomosvaryella* are endoparasitoids of leafhoppers and planthoppers belonging to the following lineages: Auchenorrhyncha: Cicadellidae: Cicadellinae, Deltocephalinae, and Hecalinae and Delphacidae (Kapoor *et al.*, 1987; Skevington & Marshall, 1997). *Tomosvaryella* occurs throughout most of the south Pacific, including the islands of New Caledonia and New Zealand. They are abundant and diverse in Australia (unpublished data) and are absent from some small islands and Hawaii (De Meyer, 1996; De Meyer & Skevington, 2000). The Fijian species of *Tomosvaryella* appear to be most closely related to New Caledonian species, but description of many more Oceanian species and a regional phylogeny are required before this hypothesis can be tested.

MATERIALS AND METHODS

Specimens examined are deposited in BPBM (Bishop Museum, Honolulu, Hawai'i, USA), CNC (Canadian National Collection of Insects, Ottawa, Ontario, Canada), FNIC (Fiji National Insect Collection, Suva, Fiji) and HNHM (Hungarian Natural History Museum, Budapest, Hungary) (abbreviations follow Evenhuis & Samuelson (2007)).

Specimen preparation follows Skevington (2003). Photographs were taken through a Leica DM550B compound microscope, through a Leica MZ16, and through a Canon EOS 10D camera equipped with a 65 mm macro. In most cases, Leica Application Suite (LAS) was used to create a montage from multiple layers of photographs. Measurements were made using a graticule. Scale bars on the figures are all 0.1 mm. If available, at least five specimens were used from each species to obtain the recorded values.

All specimens are labeled with a unique reference number, in the format J. Skevington Specimen # *n*, CNC Diptera # *n* or FBA *n*. These have been shortened to follow the format JSS*n*, CNCD*n*, and FBA*n* respectively throughout the text. These numbers are used in a database of Pipunculidae specimens that JHS maintains (available upon request) and in the Fijian Arthropod Database (<http://www.inhs.uiuc.edu/cee/fijimandala/>). Material examined is listed in order of increasing latitude within islands. Islands are organized alphabetically. Where square brackets are used in the material examined list, they enclose inferred data or notes that are not present on specimen labels. Species are described in alphabetical order.

Terminology and measurements are the same as those used by Skevington (2003, 2005). Genitalic terminology nomenclature follows Sinclair (2000) and is discussed by Skevington & Yeates (2001) with specific reference to Pipunculidae. For a recent summary of these items, see Skevington (2006).

TAXONOMY

Tomosvaryella Aczél

Tomosvaryella Aczél, 1939: 22. Type species: *Pipunculus sylvaticus* Meigen, 1824, by original designation.

Tomosvaryella is closely related to *Dorylomorpha* Aczél within the tribe Tomosvaryellini (Rafael & De Meyer, 1992). A combination of characters serves to diagnose *Tomosvaryella*: dorsocentral rows of hairs on prescutum and scutum with longer hairs anteriorly, third costal section of wing very short, pterostigma absent, cross vein r-m usually close to middle of discal cell (rarely more basal) (Rafael & De Meyer, 1992). A key to the world genera of Pipunculidae is available in Skevington & Yeates (2001) and a key to Fijian genera is available below. A key to the three Fijian species of *Tomosvaryella* is included below. One of the species is truly spectacular. It is one of only two metallic blue species of Pipunculidae known from anywhere in the world [the only other metallic blue species described is *Tomosvaryella caerulea* De Meyer (1993)].

KEY TO FIJIAN PIPUNCULIDAE GENERA

After several years of collecting via the Fiji Arthropod Survey we now have a good idea of generic level pipunculid diversity in Fiji. Although seven genera occur, several widely distributed genera such as *Eudorylas* Aczél, and *Cephalops* Fallén, are surprisingly absent. The following key is modified from Skevington & Yeates (2001) to allow for easy identification of the seven Fijian genera. Illustrations are not likely to be needed; refer to Skevington & Yeates (2001) if in doubt. Refer to the world key (Skevington & Yeates, 2001) if specimens do not run cleanly through this key. Despite recent intensive collecting efforts, there is still a chance that other genera may be discovered in the islands.

1. Ocellar bristles distinct; occiput very narrow, scarcely projecting behind eyes; head hemispherical; margin of mesonotum and scutellum with strong bristles; wing venation incomplete, cell m open, cross vein dm-cu absent, vein M reduced. Chalarinae **Chalarus** Walker
- Ocellar bristles reduced or absent; occiput swollen and plainly visible in lateral view; head *spherical*; margin of mesonotum and scutellum without strong bristles; wing venation complete, cell m closed, cross vein dm-cu present, vein M developed ... (Pipunculinae) 2
2. Propleuron with a fan of setae 3
- Propleuron bare 5
3. Frons not swollen; face not narrowed; discal medial cell expanded medially; vein M₂ present ... (Cephalopsini) **Cephalosphaera** Enderlein
- Frons swollen; face narrowed; discal medial cell not expanded medially; vein M₂ absent ... (Microcephalopsini) 4
4. Third costal section with additional cross vein; colourful flies with at least tergites 1–3 entirely yellow, often most of abdomen yellow **Collinias** Aczél
- Third costal section without additional cross vein; abdomen never extensively yellow, tergites 1–3 mostly to entirely brown or black **Microcephalops** De Meyer
5. Wing without coloured pterostigma (Fig. 5C); cross-vein r-m usually situated at about middle of cell M (Fig. 5A) ... (Tomosvaryellini) **Tomosvaryella** Aczél
- Wing with coloured pterostigma ... (Eudorylini) 6
6. Membranous area on syntergosternite 8 of males absent; syntergosternite 8 swollen, wider than tergite 5; lateral fan of setae absent or minuscule on tergite 1 **Clistoabdominalis** Skevington
- Membranous area on syntergosternite 8 of males present; syntergosternite 8 no wider than tergite 5; lateral fan of setae present and well developed on tergite 1 **Dasydorylas** Skevington

KEY TO FIJIAN *TOMOSVARYELLA*

1. Abdomen shining metallic blue and purple (Fig. 3B); femora and tibiae black (Figs. 3A, C) **Tomosvaryella corusca** Skevington & Földvári, **n. sp.**
- Abdomen shining black, at most vaguely shining greenish (Figs. 1B, 5B); femora and tibiae bright yellow (Figs. 1A–C, 5A–C)..... 2
2. Tergite 1 with 4–6 long lateral, yellowish hairs; male sternite 4 with posteromedial protuberance bearing dense brush of small setae (visible without dissection) (Fig. 2I); surstyli expanded medially and distally (Fig. 2B); phallic guide with tip angled down at less than 30 degrees in lateral view (Fig. 2G); female frons with ventral third silver-pubescent, middle third brown-pubescent, upper third glossy to matte black; ovipositor piercer short (OL:PL >1.9:1; B:PL >0.9:1), downcurved (Fig. 2J); ovipositor base brown, with no protuberances (Figs. 1C, 2J) **Tomosvaryella cagliae** Skevington & Földvári, **n. sp.**

- . Tergite 1 with 2-3 long lateral, yellowish hairs; male sternite 4 simple (Fig. 6I); surstyli narrower, expanded distally, but not medially (Fig. 6B); phallic guide with tip angled down at 45 degrees in lateral view (Fig. 6G); female frons with ventral half silver-pubescent, upper half glossy black; ovipositor piercer long (OL:PL <1.8:1; B:PL <0.8:1), only slightly downcurved (Fig. 6J); ovipositor base with a single medial protuberance (Figs. 5C, 6J) **Tomosvaryella moala** Skevington & Földvári, **n. sp.**

SPECIES ACCOUNTS

Tomosvaryella cagliae Skevington & Földvári, **new species** (Figs. 1–2)

Diagnosis. Both sexes: Halter yellow (Figs. 1A, C). Trochanters, femora, tibiae, and tarsi all yellow; all setae yellow with black sockets except for black ctenidial spines on femora (Figs. 1A, C). Tergite 1 with 4–6 long lateral, yellowish hairs. Tergites 2-5 black, mostly shining, appearing greenish at some angles (Figs. 1A–C). **Male:** Sternite 4 with posteromedial protuberance bearing dense brush of small setae (Fig. 2I). Sternite 5 with a pair of swollen structures connected by a chitinized bridge (Fig. 2I). Membranous area occupying over half of syntergosternite. Surstyli yellow; narrow, expanded medially and distally (Fig. 2B). Epandrium with right side only slightly longer than left (Fig. 2A). Phallic guide with tip angled down at less than 30 degrees in lateral view (Fig. 2G). **Female:** Frons with ventral third silver-pubescent, middle third brown-pubescent, upper third glossy to matte black. Ovipositor piercer short, downcurved, 0.91–0.92 mm (Fig. 2J). Ovipositor base mostly brown, with no protuberances (Figs. 1C, 2J).

Description. Lengths: Body: 3.1–3.6 mm; wing: 3.2–3.7 mm.

Male. Head. Holoptic. Arista brownish yellow. Flagellum yellow, long acuminate. Pedicel yellowish brown with 2–3 dorsal bristles and no ventral bristles. Scape brown with no bristles. Labellum and palps yellow. Frons silver-pubescent. Occiput silver-pubescent laterally, sparsely brown-pubescent dorsally.

Thorax. Postpronotal lobe yellow. Scutum black, with sparse brown pruinescence on all except anterolateral corners where replaced with silver (Fig. 1B). Scutellum black with weak posterior setae. Pleuron brown with sparse brown pruinescence (Fig. 1C); subscutellum black with silver pruinescence. Halter yellow.

Legs. Coxae brown; trochanters, femora, tibiae, and tarsi all yellow; all setae yellow except for black ctenidial spines on fore and mid femora (Figs. 1A, C). Pale hairs on distal half of posterior side of hind femur as long as the width of tibia at tip; hairs on basal half are half as long. Trochanters simple (no spines or protuberances).

Wing. Fourth costal section about 2–3 times as long as third, $C_4:C_3$ 1.7–3.3:1; R-M situated near middle of discal medial cell (dm), $S_3:S_2$ 1.1–1.2:1. Most of wing uniformly microtrichose except as follows: cell c bare on proximal half to two thirds, sc bare, r_1 bare in proximal third, br bare on proximal quarter to half, bm bare except near distal corner, cup and a_1 bare on proximal half to two thirds.

Abdomen. Tergite 1 silver pruinescent with 4–6 long lateral, yellowish hairs. Tergites 2–5 black, mostly shining, appearing greenish at some angles (Figs. 1A–C). Sternites 1–5 and 7 black. Sternite 6 brownish. Sternite 4 with posteromedial protuberance bearing dense brush of small setae (Fig. 2I). Sternite 5 with a pair of swollen structures connected by a chitinized bridge (Fig. 2I). Syntergosternite 8 black. Membranous area present, occupying over half of syntergosternite.

Male genitalia. Surstyli yellow, nearly symmetrical; narrow, expanded medially and distally



Figure 1. Photographs of *Tomosvaryella cagliae*. **A.** left lateral of male, FBA508874. **B.** dorsal of male, FBA508874. **C.** left lateral of allotype female, FBA501452.

(Fig. 2B). Epandrium blackish, becoming paler brown distally, slightly longer than wide; asymmetrical, right side longer (Fig. 2A). Subepandrial sclerite mostly bare, with small cluster of distal bristles continuous with bristles along medial edge of surstylus (Fig. 2B). Hypandrium asymmetrical with left gonopod projecting farthest; right gonopod more concave, rounded, than left (Fig. 2F); base of hypandrium on 45 degree angle to phallic guide and phallus (Fig. 2E). Phallus trifold, simple tubes with round openings (Fig. 2E). Phallic guide shorter than projecting phallus, pointed, with sheath over all but tip; with 4-5 bristles on each side near tip, bristles closer to tip on right side; tip pointed down at less than 30 degrees in lateral view (Figs. 2F, G). Ejaculatory apodeme axe-shaped (Fig. 2H).

Female. As male except: Dichoptic. Frons widest medially, ventral third silver-pubescent, middle third brown-pubescent, upper third glossy to matte black. Facets on front of eyes enlarged.

Ovipositor piercer yellow, short, downcurved, 0.91–0.92 mm (Figs. 1C, 2J). Ovipositor base brown, with no protuberances (Figs. 1C, 2J). OL:PL 1.95–1.97:1; BL:OL 3.32–3.49:1; B:PL 0.92–1.03:1.

Material examined. *Types:* *Holotype* ♂: FIJI: **Viti Levu:** 4 km NW Lami Town, Mt. Korobaba, 18°6'7"S, 178°22'59"E, 1–13.xii.2004, leg. K. Koto, 400 m, Malaise 1, FBA501443 (FNIC). *Allotype* ♀: FIJI: **Viti Levu:** 4 km NW Lami Town, Mt. Korobaba, 18°6'14"S, 178°22'52"E, 1–13.xii.2004, leg. K. Koto, 260 m, Malaise 5, FBA501452 (CNC). *Paratypes:* **Fiji: Viti Levu:** 1.5 km SW Vaturu Dam, 17°44'38"S, 177°40'34"E, 23.ix.–6.x.2004, A. Namaqa, 550 m, 1♂, Malaise 1, FBA508874 (CNC); Naitasiri Prov[ince], Nakobalevu M[oun][ain], 18°3'S, 178°25'E, 22.ix.–9.x.2002, M. Irwin, E. Schlinger, M. Tokota'a, 340 m, rainforest, 1♂, Malaise trap FJ-4, JSS16405 (CNC); 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 18°3'25.2"S, 178°25'12"E, 12.x.–12.xi.2004, leg. Timoci, 300 m, 1♂, Malaise 1, FBA507648 (HNHM); 4 km WSW Colo-i-Suva Village, Mt. Nakobalevu, 18.056°S, 178.422°E, 15–24.x.2003, Timoci, 325 m, 1♀, Malaise 2, CNC5369 (HNHM); same data as holotype, 1♂, FBA508858 (CNC); **Taveuni:** Cakaudrove Prov., 5.5km SE of Tavuki Village Devo Peak, 16°50'35"S, 179°57'58"E, 7–23.x.2004, P. Vodo, 1188 m, 1♂, Malaise 2, FBA508931 (BPBM); 3.2 km NW Lavena V[il][a]g[e], Mt. Koronibuabua, 16°51'18"S, 179°53'20.4"W, 5–19.ii.2005, B. Soroalau, 219 m, 1♀, Malaise 4, FBA508865 (BPBM); 3.2 km NW Lavena V[il][a]g[e], Mt. Koronibuabua, 16.855°S, 179.891°W, 28.x.–13.xi.2004, B. Soroalau, 234 m, 1♀, Malaise 2, FBA522136 (CNC).

Etymology. *Tomosvaryella cagiae* is named in honor of Akanisi Caginotoba ("Cagi") for her tremendous contribution to the Fiji Terrestrial Arthropod Survey.

Remarks. Only eight specimens of this species have been collected so inferences about behaviour or phenology are tentative. The flight period appears to be between late September and mid February (austral spring and summer). Specimens have been collected at a wide range of elevations (219 to 1188 m). *Tomosvaryella cagiae* appears to be the sister species of *Tomosvaryella moala*, but more work on Pacific *Tomosvaryella* is needed to test this hypothesis.

Distribution. Known from Taveuni and Viti Levu, Fiji.

Tomosvaryella corusca Skevington & Földvári, new species

(Figs. 3–4)

Diagnosis. Both sexes: Scutum black, shining purple and blue from some angles (Fig. 3B). Scutellum black, shining green from some angles (Fig. 3B). Subscutellum with silver lateral pruinescence and brown medial pruinescence. Halter pale with black knob (Fig. 3B). Coxae, trochanters, femora, and tibiae black (Figs. 3A, C). Tergite 1 brown pruinescent with 4 long lateral, black hairs. Tergites 2–5 shining iridescent blue (also appearing purple or green depending on the angle), pruinescence restricted to narrow pair of angled brown stripes on tergite 2 (Fig. 3B). **Male:** Sternite 5 with a pair of swollen structures connected by a chitinized bridge (Fig. 4H). Membranous area present, occupying about half of syntergosternite. Surstyli yellow, similar in shape but with left surstylus longer; narrow, simple, slightly hooked at tips (Fig. 4A). Subepandrial sclerite with elongate lateral patches of small setae (Fig. 4A). Phallic guide very narrow (no wider than phallus), with cluster of 5–6 bristles on left side near tip (Figs. 4E, F). **Female:** Frons with ventral quarter silver-pubescent, transitioning to matte brown over next quarter; glossy black on dorsal half. Piercer yellow, long, downcurved (Figs. 3C, 4D). Ovipositor with no medial protuberance (Fig. 4D).

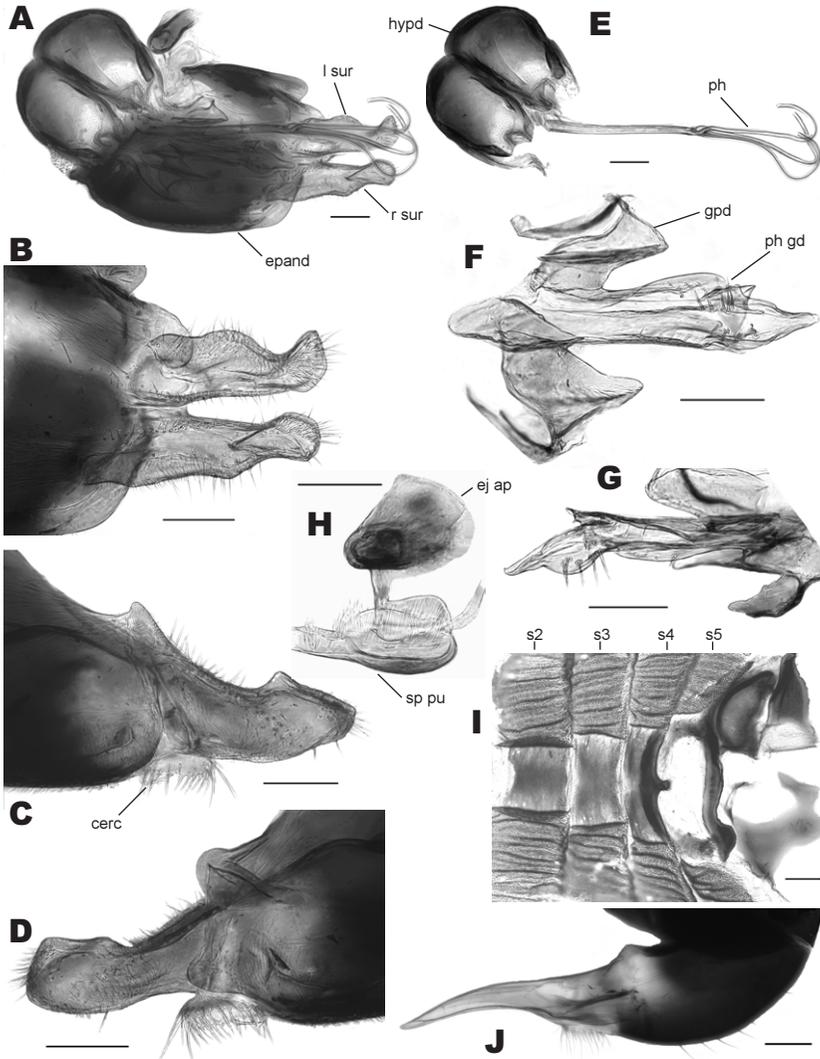


Figure 2. *Tomosvaryella cagliae*. **A.** dorsal of male terminalia, FBA507648. **B.** dorsal of male surstyli and subepandrial sclerite, FBA507648. **C.** right lateral of male surstyli, FBA507648. **D.** left lateral of male surstyli, FBA507648. **E.** dorsal view of hypandrium and phallus of male, FBA507648. **F.** dorsal of phallic guide of male, FBA507648. **G.** left lateral of phallic guide of male, FBA507648. **H.** lateral of ejaculatory apodeme and sperm pump of male, FBA507648. **I.** ventral of male abdomen, FBA507648. **J.** left lateral of female ovipositor, FBA508865. Abbreviations: cerc = cerci; ej ap = ejaculatory apodeme; epand = epandrium; gpd = gonopod; hypd = hypandrium; l sur = left surstylus; r sur = right surstylus; ph = phallus; ph gd = phallic guide, s = sternite, sp pu = sperm pump. Scale bars = 0.1 mm.

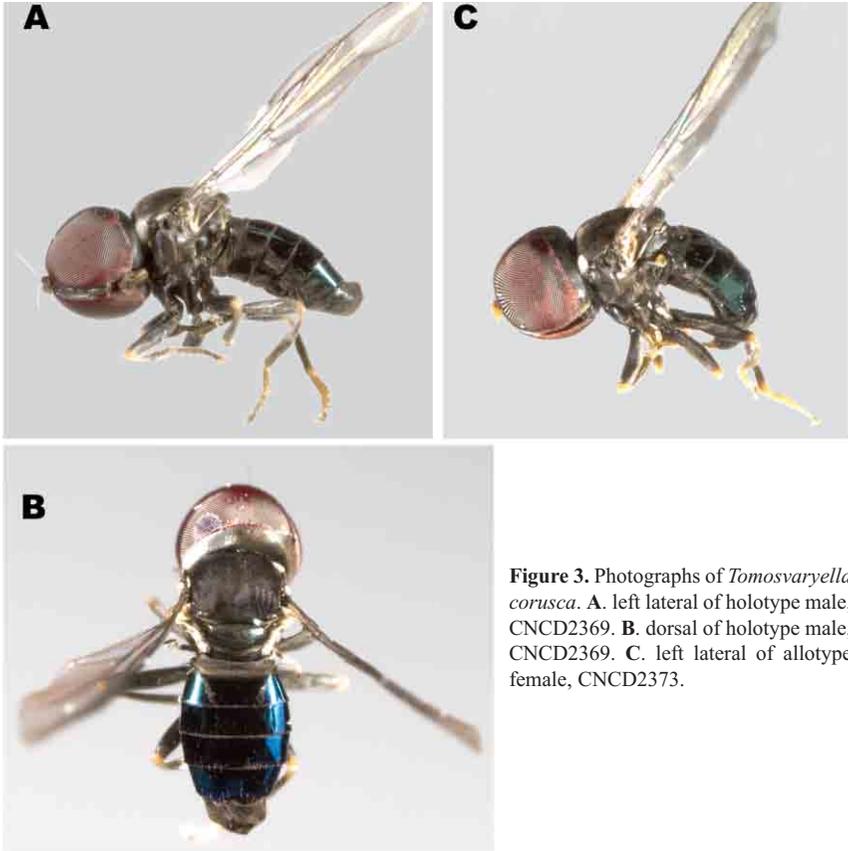


Figure 3. Photographs of *Tomosvaryella corusca*. **A.** left lateral of holotype male, CNCN2369. **B.** dorsal of holotype male, CNCN2369. **C.** left lateral of allotype female, CNCN2373.

Description. Lengths: Body: 2.7–3.0 mm; wing: 2.8–2.9 mm.

Male. Head. Holoptic. Arista dark brown. Flagellum brownish yellow, long acuminate. Pedicel brown with 3 dorsal bristles and no ventral bristles. Scape brown with no bristles. Labellum and palps yellow. Frons silver-pubescent. Occiput silver-pubescent laterally, brown-pubescent dorsally.

Thorax. Postpronotal lobe pale yellow. Scutum black, shining purple and blue from some angles, covered with brown pruinescence (Figs. 3A–C). Scutellum black, shining green from some angles, with weak posterior setae. Pleuron black to brown with sparse brown pruinescence (Fig. 3A); subscutellum black with silver lateral pruinescence and brown medial pruinescence. Halter pale with black knob (Fig. 3B).

Legs. Coxae, trochanters, femora, and tibiae black; dorsal surface of tarsi brown, ventral surface pale yellow; all setae yellow except for black ctenidial spines on fore and mid femora (Figs. 3A, C). Pale hairs on posterior side of hind femur variable length; longest at distal 1/3, as long as 2/3 width of tibia at tip. Trochanters simple (no spines or protuberances).

Wing. Fourth costal section about 3 times as long as third, $C_4:C_3$ 2.8–3.8:1; R-M situated near middle of discal medial cell (dm), $S_3:S_2$ 1.2–1.4:1. Most of wing uniformly microtrichose except as

follows: cell c bare on proximal third, sc bare, r_1 bare in proximal corner, br bare on proximal quarter, bm bare except near distal corner, cup bare on proximal half, and a_1 bare on proximal quarter.

Abdomen. Tergite 1 brown pruinulent with 4 long lateral, black hairs. Tergites 2–5 shining iridescent blue or purple depending on the angle, pruinosity restricted to narrow pair of angled pale brown stripes on tergite 2 (Fig. 3B). Sternites black. Sternite 4 simple (Fig. 4H). Sternite 5 with a pair of swollen structures connected by a chitinized bridge (Fig. 4H). Syntergosternite 8 black. Membranous area present, occupying about half of syntergosternite.

Male genitalia. Surstyli yellow, similar in shape but with left surstylus longer; narrow, simple, slightly hooked at tips (Fig. 4A). Epandrium black, longer than wide; asymmetrical, right side longer (Fig. 4A). Subepandrial sclerite with elongate lateral patches of small setae (Fig. 4A). Hypandrium almost symmetrical (Fig. 4E). Phallus trifid, simple tubes with round openings (Figs. 4E, F). Phallic guide shorter than projecting phallus, very narrow (no wider than phallus), pointed, with cluster of 5–6 bristles on left side near tip (Figs. 4E, F). Ejaculatory apodeme boot-shaped, darkest near base (Fig. 4G).

Female. As male except: Dichoptic. Frons only slightly enlarged medially, ventral quarter silver-pubescent, transitioning to matte brown over next quarter; glossy black on dorsal half. Facets on front of eyes enlarged. Ovipositor 0.82 mm long (Fig. 4D). Piercer yellow, long, downcurved (Figs. 3C, 4D). Ovipositor base black, with no medial protuberance (Figs. 3C, 4D). OL:PL 1.49:1; BL:OL 3.44:1; B:PL 0.54:1.

Material examined. *Types:* *Holotype* ♂: FIJI: **Kadavu:** Vunisea Village, Korosalusalu Mountain, trail above microwave tower, 19°3'14"S, 178°9'51"E, 23.i.2006, J. Skevington, ~200 m, hilltopping, CNC D2369 (FNIC). *Allotype* ♀: same data as holotype, CNC D2373 (CNC). *Paratypes:* FIJI: **Kadavu:** same data as holotype, 7♂, CNC D2365-8, 2370-2 (BPBM, CNC, FNIC, HNHM); Solodamu, 19°4'S, 178°7'E, 25.viii.–23.x.2003, E.I. Schlinger, M. Irwin, M. Tokota'a, 128 m, in coastal limestone forest, 1♂, Malaise trap FJ-41B, FBA15859 (CNC).

Etymology. From the Latin "*corusco*" for flashing, gleaming or glittering, in reference to the glittering blue abdomens of these flies.

Remarks. Only ten specimens of this species have been collected during two collecting events so inferences about phenology are not possible. This is one of the only species of pipunculid discovered hilltopping in Fiji so far [see Skevington (2001) for a discussion of hilltopping in Pipunculidae]. Few species of *Tomosvaryella* hilltop, so it is particularly surprising that one of the few Fijian hilltopping species is from this genus (Skevington, 2000, 2001). The spectacular colouration must be used for display during hilltopping. Males patrolling a hilltop on Korosalusalu Mountain did not hover motionless or stay over one landmark like most hilltopping pipunculids. Instead, they actively darted back and forth across the trail, glittering in the sun. The female colouration is similar and suggests that females also display, or at least use their colour to allow quick species recognition by males.

Distribution. Endemic to Kadavu, Fiji.

Tomosvaryella moala Skevington & Földvári, new species

(Figs. 5–6)

Diagnosis. Both sexes: Halter yellow. Trochanters, femora, tibiae, and tarsi all yellow; all setae yellow except for black ctenidial spines on femora (Figs. 5A, C). Tergite 1 with 2-3 long lateral, yellowish hairs. Tergites 2-5 black, mostly shining, appearing greenish at some angles (Figs. 5A–C). **Male:** Sternite 4 simple (Fig. 6I). Sternite 5 slightly concave

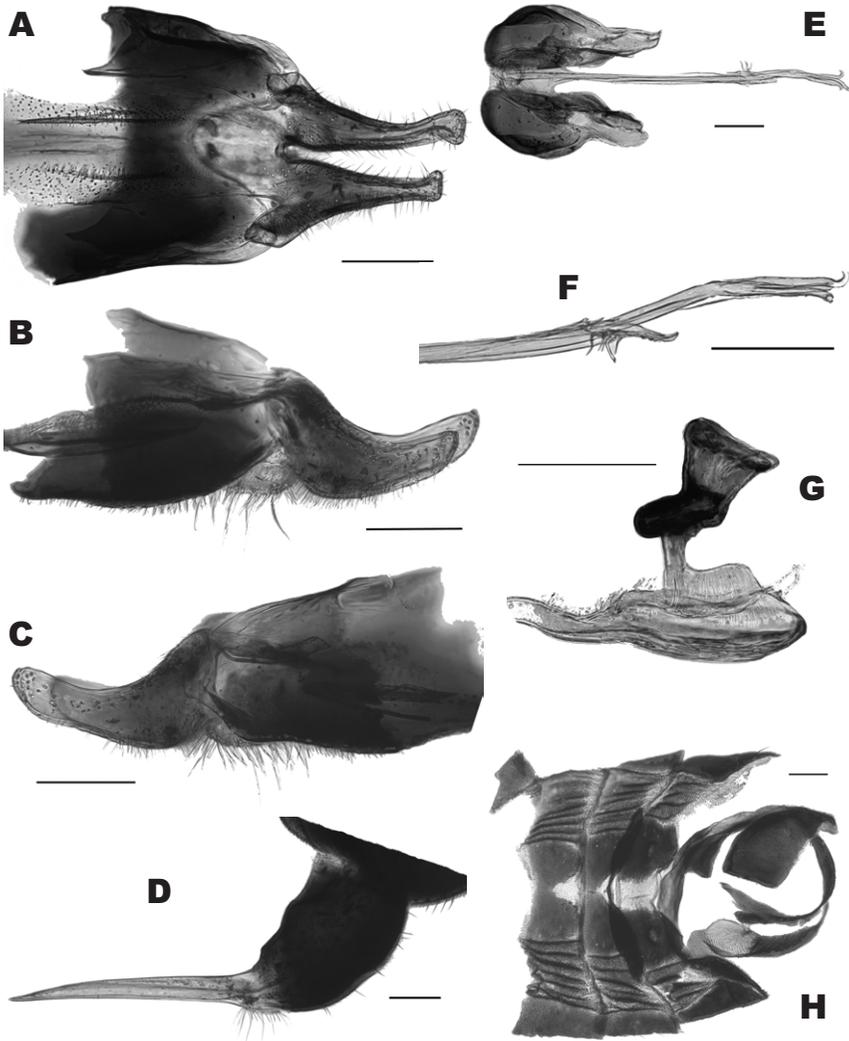


Figure 4. *Tomosvaryella corusca*. **A.** dorsal of male surstyli, subepandrial sclerite and part of epanthrium, CNCN2367. **B.** right lateral of male surstyli, CNCN2367. **C.** left lateral of male surstyli, CNCN2367. **D.** left lateral of allotype female ovipositor, CNCN2373. **E.** dorsal view of hypandrium, phallus and phallic guide (latter mostly concealed) of male, CNCN2367. **F.** right lateral of phallus and phallic guide of male, CNCN2367. **G.** lateral of ejaculatory apodeme and sperm pump of male, CNCN2367. **H.** ventral of male abdomen, CNCN2371. Scale bars = 0.1 mm.

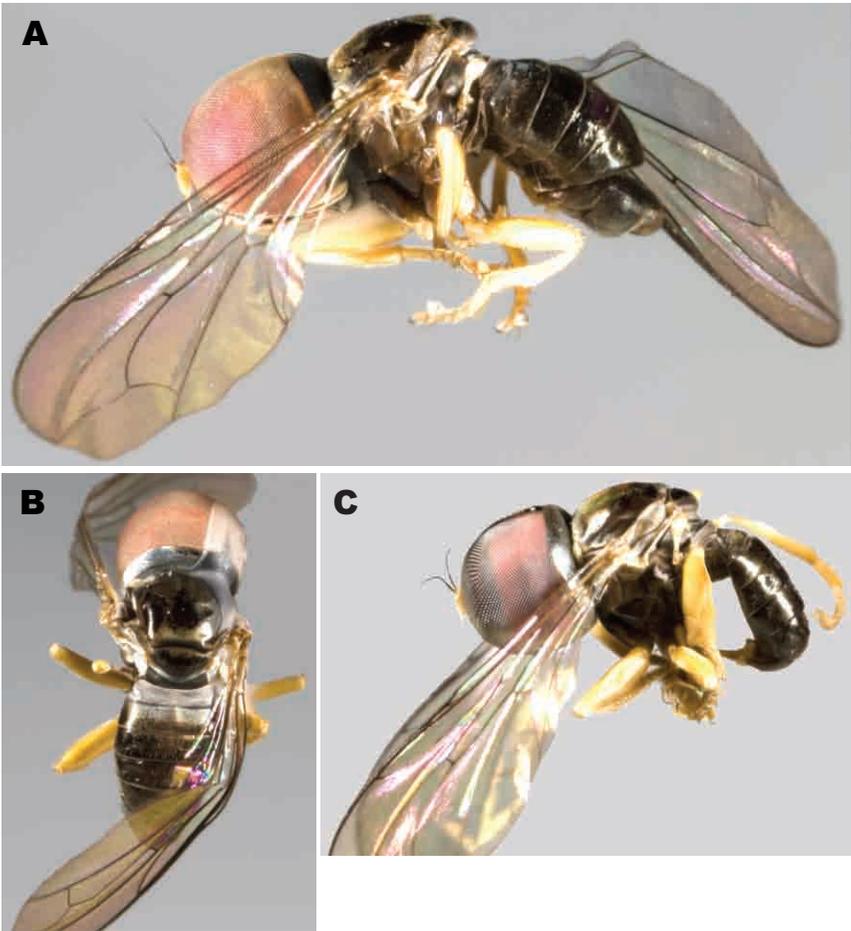


Figure 5. Photographs of *Tomosvaryella moala*. **A.** left lateral of male, FBA508477. **B.** dorsal of male, FBA508477. **C.** left lateral of allotype female, FBA508463.

with medial projection and lateral rectangular projections (Fig. 6I). Membranous area occupying over half of syntergosternite. Surstyli yellow, somewhat asymmetrical; narrow, expanded distally (Fig. 6B). Right surstylus wider, more angular than left. Epandrium with right side nearly twice as long as left (Fig. 6A). Subepandrial sclerite bare (Fig. 6B). Phallic guide with tip angled down at 45 degrees in lateral view (Fig. 6G). **Female:** Frons with ventral half silver-pubescent, upper half glossy black. Ovipositor piercer long, only slightly downcurved (Fig. 6J). Ovipositor base with medial protuberance (Figs. 5C, 6J).

Description. Lengths: Body: 3.3–3.6 mm; wing: 3.6–4.0 mm.

Male. Head. Holoptic. Arista brownish yellow. Flagellum yellow, long acuminate. Pedicel yellow.

lowish brown with 2-3 dorsal bristles and no ventral bristles. Scape brown with no bristles. Labellum and palps yellow. Frons silver-pubescent. Occiput silver-pubescent laterally, sparsely brown-pubescent dorsally.

Thorax. Postpronotal lobe yellow. Scutum black, with sparse brown pruinescence on all except anterolateral corners where replaced with silver (Fig. 5B). Scutellum black with weak posterior setae. Pleuron brown with sparse brown pruinescence (Fig. 5A); subscutellum black with silver pruinescence. Halter yellow (Fig. 5A).

Legs. Coxae brown; trochanters, femora, tibiae, and tarsi all yellow; all setae yellow except for black tenidial spines on femora (Figs. 5A-C). Pale hairs on distal half of posterior side of hind femur longest in middle, as long as 1/3 of width of tibia at tip. Trochanters simple (no spines or protuberances).

Wing. Fourth costal section about 2-3 times as long as third, $C_4:C_3$ 1.8-2.5:1; R-M situated near middle of discal medial cell (dm), $S_3:S_2$ 1.0-1.1:1. Most of wing uniformly microtrichose except as follows: cell c bare on proximal half to two thirds, sc bare, r_1 bare in proximal third, br bare on proximal quarter to half, bm bare except near distal corner, cup and a_1 bare on proximal half to two thirds.

Abdomen. Tergite 1 silver pruinescent with 2-3 long lateral, yellowish hairs. Tergites 2-5 black, mostly shining, appearing greenish at some angles (Figs. 5A-C). Sternites 1-5 and 7 black. Sternite 6 brownish. Sternite 4 simple (Fig. 6I). Sternite 5 slightly concave with medial projection and lateral rectangular projections (Fig. 6I). Syntergosternite 8 black. Membranous area present, occupying over half of syntergosternite.

Male genitalia. Surstyli yellow, somewhat asymmetrical; narrow, expanded distally (Fig. 6B). Right surstylus wider, more angular than left (Fig. 6B). Epandrium yellowish brown, longer than wide; asymmetrical, right side nearly twice as long (Fig. 6A). Subepandrial sclerite bare (Fig. 6B). Hypandrium asymmetrical with left gonopod projecting farthest; right gonopod more concave, rounded, than left (Fig. 6F); base of hypandrium on 45 degree angle to phallic guide and phallus (Fig. 6E). Phallus trifid, simple tubes with round openings (Fig. 6E). Phallic guide shorter than projecting phallus, pointed, with sheath over all but tip; with 4-5 bristles on each side near tip, bristles closer to tip on right side; tip angled down at 45° in lateral view (Figs. 6F, G). Ejaculatory apodeme axe-shaped (Fig. 6H).

Female. As male except: Dichoptic. Frons widest medially, ventral half silver-pubescent, upper half glossy black. Facets on front of eyes enlarged. Ovipositor 0.94 mm long. Piercer yellow, long, only slightly downcurved (Fig. 6J). Ovipositor base brown, with medial protuberance (Figs. 5C, 6J). OL:PL 1.74:1; BL:OL 3.56:1; B:PL 0.72:1.

Material examined. *Types:* *Holotype* ♂: FIJI: **Viti Levu:** 1.8 km E Navai Village, old trail to Mt. Tomaniivi, 17°37'16"S, 177°59'53"E, 16.xi.-28.xii.2004, E. Namatalau, 700 m, Malaise 4, FBA508842 (FNIC). *Allotype* ♀: same data as holotype, 6.v.-20.vi.2005, E. Namatalau, 700 m, Malaise 4, FBA508463 (CNC). *Paratype:* FIJI: **Viti Levu:** same data as holotype, 16.iii.-6.v.2005, E. Namatalau, 100 m [error, should be 700 m?], 1 ♂, Malaise 4, FBA508477 (CNC).

Etymology. *Tomosvaryella moala* is named in honor of Moala Tokota'a for his tremendous contribution to the Fiji Terrestrial Arthropod Survey. Moala ran the field component of the project. He has a tremendous ability to motivate and involve other Fijians in conservation endeavours such as this survey.

Remarks. The three known specimens of this species are all from the trail to Mt. Tomaniivi on Viti Levu. Based on the few records, the species appears to fly throughout the year.

Distribution. Known from Taveuni and Viti Levu, Fiji.

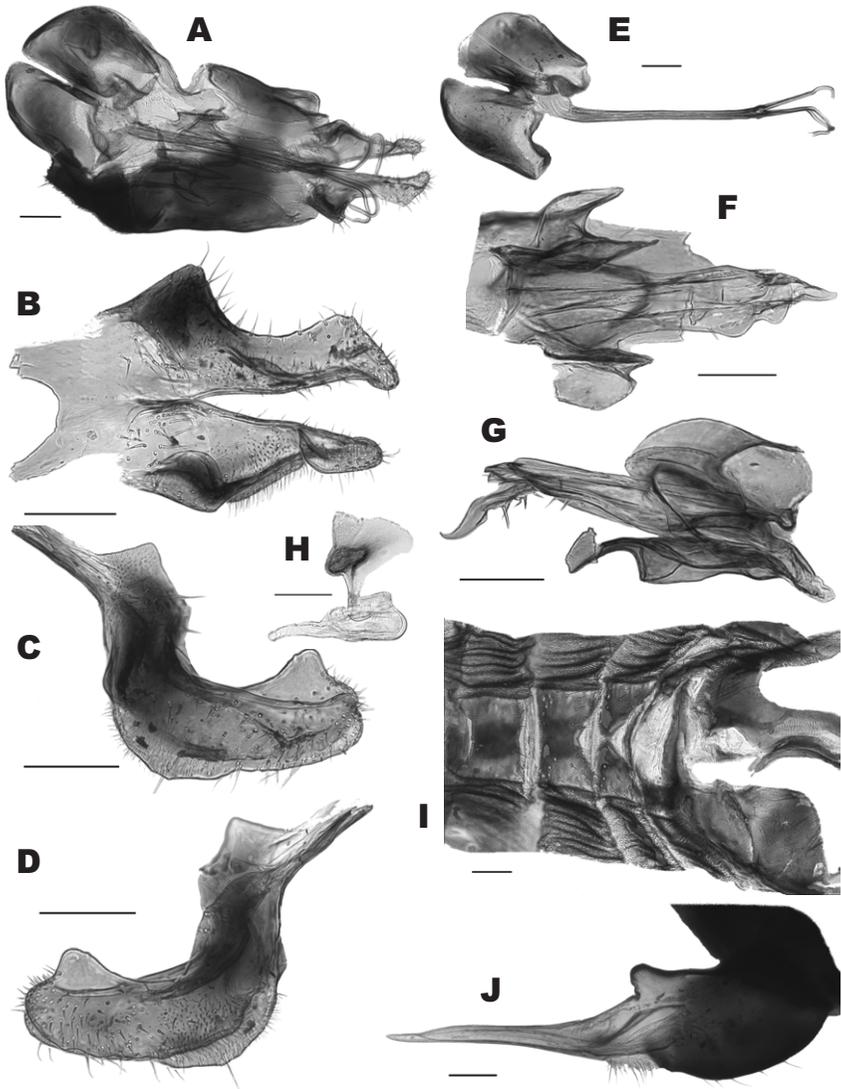


Figure 6. *Tomosvaryella moala*. **A.** dorsal of holotype male terminalia, FBA508842. **B.** dorsal of male surstyli and subepandrial sclerite, FBA508477. **C.** right lateral of male surstyli, FBA508477. **D.** left lateral of male surstyli, FBA508477. **E.** dorsal view of hypandrium and phallus of male, FBA508477. **F.** dorsal of phallic guide of male, FBA508477. **G.** left lateral of phallic guide of male, FBA508477. **H.** lateral of ejaculatory apodeme and sperm pump of male, FBA508477. **I.** ventral of holotype male abdomen, FBA508842. **J.** left lateral of allotype female ovipositor, FBA508463. Scale bars = 0.1 mm.

ACKNOWLEDGMENTS

The following curators and curatorial assistants sent us the specimens used in this study: K. Arakaki, N. Evenhuis (BPBM) and A. Caginotoba Tokota'a (FNIC). This study was supported in part by National Science Foundation grant DEB 0425790, funding from the Schlinger Foundation, and funding from Agriculture and Agri-Food Canada. These agencies and the Government of Fiji (especially the Ministries of Environment and Forestry) are thanked for their support. Suggestions from two anonymous reviewers are appreciated and enhanced the manuscript.

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