

A New Species of *Lygistorrhina* Skuse from Fiji (Diptera: Lygistorrhinidae)^{1,2}

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Abstract. A new species of *Lygistorrhina*, *L. fijiensis*, **n. sp.**, is described and illustrated. It is similar in appearance to four other species of *Lygistorrhina* with pictured wings, *L. pictipennis* Okada (Japan), *L. cincticornis* Edwards (Borneo), *L. chaoi* Papp (Taiwan), and *L. legrandi* Matile (Gabon, Cameroon). It marks the first record of the family Lygistorrhinidae from Fiji.

INTRODUCTION

Until the advent of Malaise trapping, lygistorrhinids were rarely encountered in collecting or collections. Thompson (1975) provided a world view of the family at that time and his work led others to investigate the biodiversity of the family and its familial placement among mycetophiloid-looking flies. In 1975, 11 extant species in 1 genus were known in the family. Subsequent works by Matile (1979, 1986, 1990, 1996), Grimaldi & Blagoderov (2001), Papp (2002, 2005), Hippa *et al.* (2005) added new species and genera worldwide, primarily the Old World tropics. Currently, there are 32 extant species in 7 extant genera. Fossil taxa exist but some recently proposed genera in Blagoderov & Grimaldi (2004) may not be properly placed in Lygistorrhinidae (*q.v.* Hippa *et al.* 2005) and require further study.

MATERIALS AND METHODS

Specimens in this study derive primarily from collecting and trapping conducted by the Fiji Biodiversity of Arthropods (FBA) and NSF-funded Fiji Terrestrial Arthropod Survey projects, types and voucher specimens of which will be deposited in the Fiji National Insect Collection, Suva (FNIC). Where series numbers permit, paratypes and duplicates are deposited in the Bishop Museum, Honolulu (BPBM) and the National Museum of Natural History, Washington, DC (USNM). Morphological terminology follows Sølvi *et al.* (2000).

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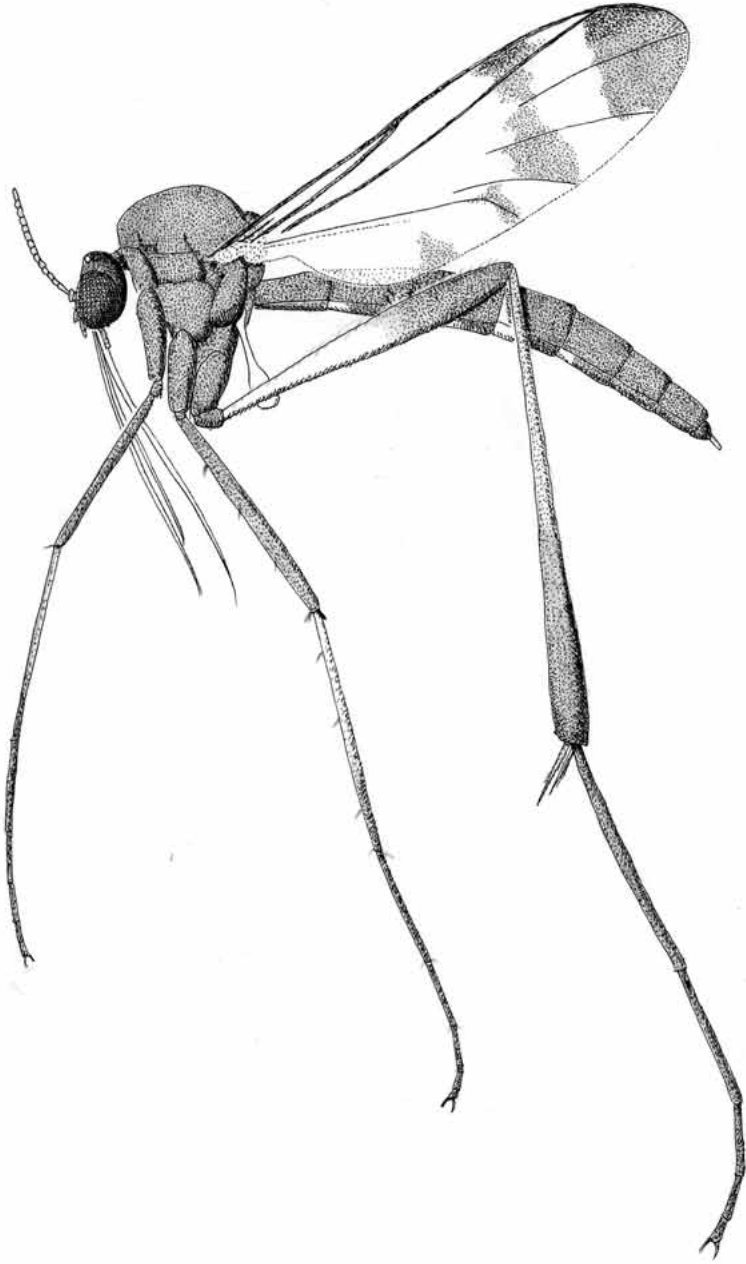


Figure 1. *Lygistorrhina fijiensis*, sp. nov., female habitus.

SYSTEMATICS

Lygistorrhina Skuse

Lygistorrhina Skuse, 1890: 598. Type species *Lygistorrhina insignis* Skuse, 1890, by monotypy.

The genus was proposed by Skuse (1890) for an Australian species, *L. insignis* Skuse. Six years later, Williston (1896) described the genus *Probolaeus* for the West Indian species *P. singularis*. *Probolaeus* is currently considered a subgenus of *Lygistorrhina* and is restricted to the New World. Old world species are treated in the nominate subgenus. Including the new species described here, some 17 species are now known in *Lygistorrhina* (8 of these in the subgenus *Probolaeus*).

Lygistorrhina fijiensis Evenhuis, n. sp.

(Figs. 1–8)

Diagnosis. Most similar in appearance to the African *L. legrandi* Matile by virtue of the solid infuscation at the apex of the wing (Fig. 7) but can easily be separated from it by the concolorous antennal flagellomeres (some flagellomeres contrastingly black in *L. legrandi*) and the different male genitalic characters. This species also differs from the other species of *Lygistorrhina* with pictured wings that are hyaline at the apex (*L. pictipennis*, *L. cincticornis*, and *L. chaoi*) by the concolorous antennal flagellomeres (these flagellomeres with contrasting black subapical segments in *L. pictipennis*, *L. cincticornis*, and *L. chaoi*).

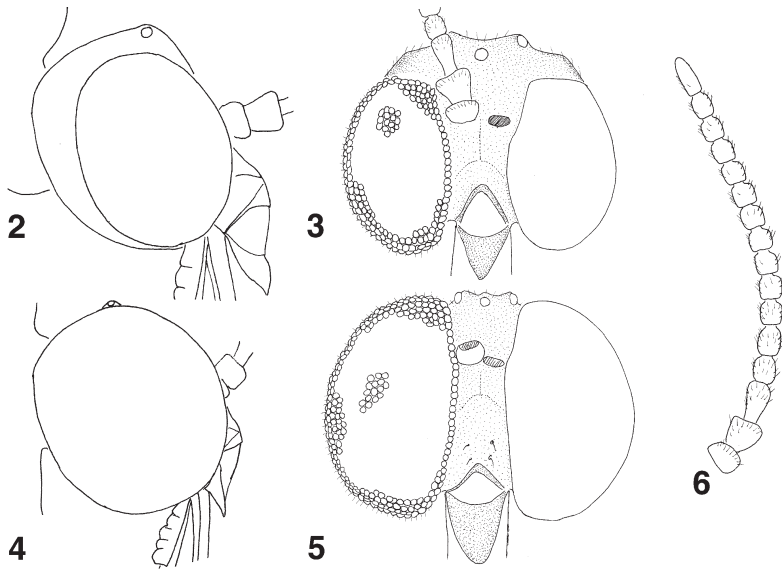
Description. Male. Lengths. Body: 3.5–4.8 mm; wing: 2.8–3.5 mm.

Head (Figs. 3, 5). Medial portion of occiput, vertex, and frons dark brown to black, clypeus and labrum shiny brown, remainder of head brown to pale brown; three ocelli, median ocellus slightly smaller than lateral ocelli; eyes large, globular, taking up much of head; proboscis length subequal to fore coxa and femur combined. Antennae (Fig. 6) unicolorous pale brown to yellow, scape and pedicel with short stiff hairs apically; flagellomeres with short stiff hairs on lateral and dorsal surfaces, short fine hairs on ventral surface, medial surface generally bare; first flagellomere cylindrical, length 2 times width, flagellomeres 2–13 squarish, length subequal to width, flagellomere 14 blunt cylindrical, length ca. 1.5 times width, tip rounded.

Thorax. Brown throughout; mesoscutum with minute hairs anteriorly and dorsally; proepimeron with four setae; laterotergite with row of setae caudally; halter stem and knob white.

Legs. Coxae and fore and mid femora brown; fore coxa with row of 6–8 short stiff hairs anteriorly; mid coxa with transverse row of 4–5 stiff hairs apically; hind coxa with 2 short setae subapically; hind femur 1.5 times length of mid femur, swollen on apical half, greatest width subapically, hind femur yellow to yellowish brown with brown to dark brown on apical one-third; tibiae yellow basally, brown apically, setulae in regular rows; hind tibiae narrow basally, gradually becoming wider apically to apex where width subequal to femur; tibial spurs 1:2:2; spurs short on fore and mid tibiae, long on hind tibia, length of tibial spurs on hind leg ca. 1/4 length of hind basitarsus; tarsi brown, with typical setulae and hairs; fore and mid claws pale brown long, slender with basal tooth ca. one-third length of claw; hind claws black, short, thick, with rudimentary subbasal tooth.

Wing (Fig. 7). Suffused pale yellowish brown throughout with contrasting brown pattern as follows: two transverse bands from costa to posterior margin of wing (darkest at costa): one at apical 1/5 of wing from end of vein R5 to anterior edge of vein M2; second from costa at about apical third posteriorly to anterior edge of vein M3+4. Brown spot also at apex of vein CuA1 and pale brown spot



Figures 2-6. *Lygistorrhina fijiensis*, sp. nov. 2. Female head, lateral (diagrammatic). 3. Male head, lateral (diagrammatic). 4. female head, anterior. 5. Male head, anterior. 6. Male antenna.

in apical one-third of anal cell. Sc incomplete. Basal portions of M1, M2 and M3+4 effaced, M1 slightly sinuous to wing margin.

Abdomen. Extremely long, thin; dark brown to black with yellow to white on posterior margins of segments II-VI; tergite I bare on anterolateral two-thirds, with short black hairs elsewhere; abdominal segments II-VII (tergites and sternites) with sparse short black hairs evenly distributed except bare on yellow to white areas.

Genitalia (Fig. 8). Hypopygium brown with apical 2/3 of gonostyli pale yellow with brown apex. Gonocoxites with sparsely distributed stiff setae; gonostylus porpoise-head shaped apically, densely pilose on inner margin, with short, stiff hairs on outer apical surface; typical subbasal long seta present on inner margin; additional long seta present at about mid-length on inner margin. Tergite 9 with dense spikey, villa-like setation along caudal margin, strong setae sparsely distributed throughout dorsal surface.

Female. as in male except as follows: Head (Figs. 2, 4) with eyes much smaller, spherical, not globular; occiput and vertex much more prominent, predominantly black with pale brown along inner eye margins; occiput and vertex sparsely black setose. Abdomen thicker than male, all brown; tergites with yellow on anterolateral portion of segments III-VI; sternites with small yellow spots on apical portions of segments III-VI. Genitalia not dissected; cerci rounded apically, pale yellow.

Types. *Holotype* ♂ and 11 ♂, 6 ♀ *paratypes* from FIJI: **Taveuni:** 5.3 km SE Tavuki Village, Mt. Devo, 1064 m, 16.841°S, 179.958°W, 2-10 Oct 2002, Malaise, E.I. Schlinger, M. Tokota'a [FBA 160499-160516]; 8 ♀, same data except 2-27 Dec 2002 [FBA 127925-127932];. *Other paratypes:* Fiji: **Taveuni:** 2 ♀, 3.2 km NW Lavena Village, Mt. Koronibuabua, 234 m, 16.855°S, 179.891°W, 4-18 Jan 2004, Malaise, B. Soroalau [FBA 092512092513]; 1 ♂, 5 ♀, Soqulu House in Soqulu Estate, 140 m, 16.833°S, 180.0°W, 14-21 Nov 2002, Malaise, E.I. Schlinger, M. Tokota'a [FBA 099520-099525]; 1 ♂, 2 ♀, 5.5

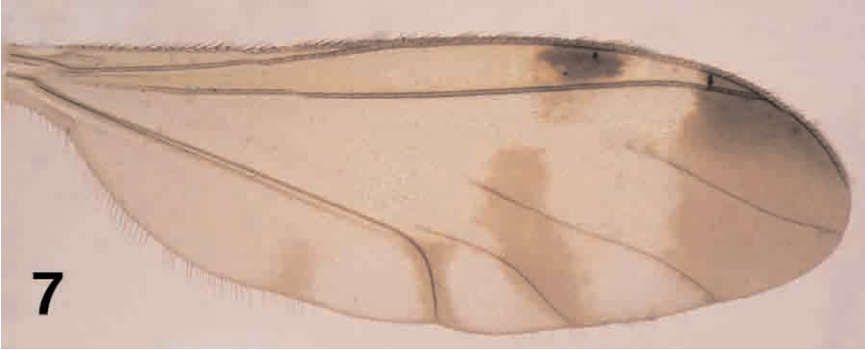


Figure 7. *Lygistorrhina fijiensis*, sp. nov., male wing.

km SE Tavuki Village, Devo Peak, 1188 m, 16.843°S, 179.966°W, 30 Jun–14 Jul 2004, P. Vodo [FBA 152717–152719]; 1♂, 2♀, 5.3 km SE Tavuki Village, Mt. Devo, 1064 m, 16.841°S, 179.958°W, 17–24 Oct 2002, Malaise, E.I. Schlinger, M. Tokota'a [FBA 126520–126522]; 5♂, 9♀, same data except 10–17 Oct 2002 [FBA 0913653–091376]; 3♂, 3♀, same data except 24–31 Oct 2002 [FBA 105852–105857]; 2♂, 2♀, same data except 14–21 Nov 2002 [FBA 162084–162087]; 1♂, same data except 17–24 Oct 2002 [FBA 095539]; 7♂, 10♀, same data except 31 Jul–14 Aug 2004 [FBA 107700–107716]; 1♂, 3♀, same data except 28 Jan–11 Feb 2005, P. Vodo [FBA 531744–531747]; 4♀, same data except 27 Dec 2002–3 Jan 2003 [FBA 145531–145537]; 4♂, 3♀, same data except 17–24 Oct 2002 [FBA 098478–098484]; 1♂, 1♀, same data except 24–31 Oct 2002 [FBA 147907–147908]; 1♂, 1♀, same data except 2–10 Oct 2002 [FBA 108214–108215]; 3♂, 3♀, 6 km SE Tavuki Village, Devo Peak, 1187 m, 16.843°S, 179.966°W, 21 Nov–13 Dec 2002, Malaise, E.I. Schlinger, M. Tokota'a [FBA 149483–149488]; 1♀, same data except 20–27 Dec 2002 [FBA 144472]; 1♀, same data except 24–31 Oct 2002 [FBA 091188]; 2♂, 2♀, same data except 31 Oct–14 Nov 2002 [FBA 091189–091192]; 1♂, 1♀, same data except 27 Dec 2002–3 Jan 2003 [FBA 161615–161616]; 1♂, same data except 14–21 Nov 2002 [FBA 129712]; 1♂, 2♀, same data except 30 Jun–14 Aug 2004 [FBA 51429–51431]; 1♀, Tavuki Village, Mt. Devo, 892 m, 16.837°S, 179.973°W, 14–31 Jul 2004, Malaise, P. Vodo [FBA 151639]; 1♀, same data except 14–31 Jul 2004 [FBA 099300]; 5♂, 3♀, Tavuki Village, Mt. Devo, 734 m, 16.831°S, 179.98°W, 14 Jul–14 Aug 2004 [FBA 091460–091467]; 8♂, 4♀, same data except 14 Aug–9 Sep 2004 [FBA 531724–531735]. **Gau:** 1♀, 3.3 km SE Navukailagi Village, Mt. Delaco, 564 m, 17.986°S, 179.278°E, 26 Mar–7 Apr 2005, Malaise, U. Racule [FBA 531748]; 1♀, 4.0 km SE Navukailagi Village, 496 m, 17.98°S, 179.275°E, 7–19 Apr 2005, Malaise, U. Racule [FBA 531742]. **Kadavu:** 1♀, 0.25 km SW Solodamu Village, Moanakaka Bird Sanctuary 60 m, 19.078°S, 178.121°E, 6 Nov 2004–8 Jan 2005, Malaise, S. Lau [FBA 531743]; 1♀, same data except 28 Jul–4 Sep 2004 [FBA 531749]. **Vanua Levu:** 4♂, 7♀, Batiqera Range, 6 km NW Kilaka Village, 98 m, 16.807°S, 178.991°E, 3–10 Jun 2004, Malaise, P. Manueli [FBA 092735–092745]; 1♀, same data except 28 Jun–21 Jul 2004 [FBA 092729]; 2♂, 2♀, same data except 28 Jun–21 Jul 2004 [FBA 092721–092724]; 2♂, same data except 61m, 16.811°S, 178.998°E, 3–10 Jun 2004 [FBA 115308–115309]; 3♂, same data except 3–10 Jun 2004 [FBA 114247–114249]; 3♂, 1♀, same data except 15–28 Jun 2004 [FBA 092835–

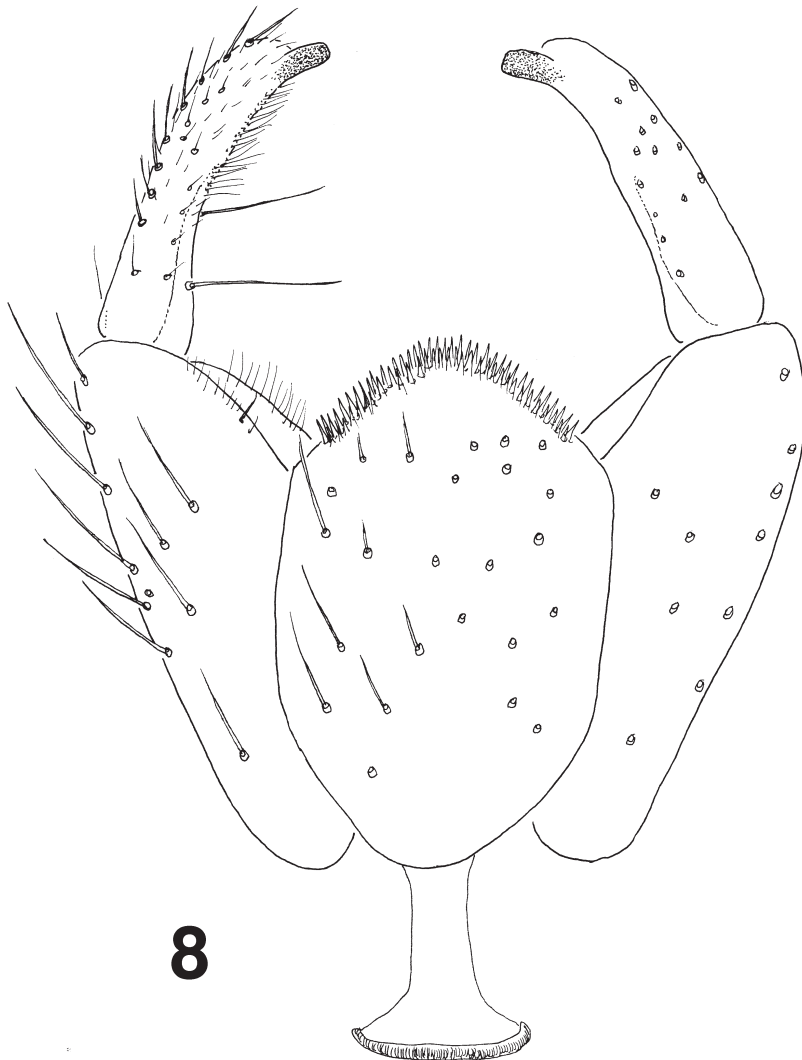


Figure 8. *Lygistorrhina fijiensis*, sp. nov., male genitalia, ventral.

092838]; 1♂, 1♀, same data except 146m, 16.815°S, 78.986°E, 28 Jun–21 Jul 2004 [FBA 104793–104794]; 13♂, 3♀, same data except 113 m, 16.732°S, 179.0°E [FBA 092762–092777]; 3♂, 1♀, same data except 154 m, 16.807°S, 178.988°E, 15–28 Jun 2004 [FBA 092839–092842]. **Viti Levu:** 1♀, 4 km NW Lami Town, Mt. Korobaba, 400 m, 18.102°S, 178.383°E, 1–13 Dec 2004, Malaise, K. Koto [FBA 531737]; 2♀, Wainivalau, Sovi Basin, 300 m, 17.9°S, 178.233°E, 8–16 May 2003, Malaise, M.E. Irwin, E.I. Schlinger, M. Tokota'a [FBA 002062–002063]; 1♀, 4 km NW Colo-i-Suva Village, Mt. Nakobalevu, 372

m, 10.055°S, 178.424°E, 17–24 Mar 2003, Malaise, Timoci leg. [FBA 090629]; 8 ♀, same data except: 4–14 Nov 2003 [FBA 095466–095473]; 2 ♀, Koroyanitu Eco Park, 0.6 km N. Abaca Village, Mt. Evans Range, 800 m, 17.667°S, 177.66°E, 26 Oct–6 Nov 2002, Malaise, Schlinger, Tokota’a [FBA079555, 079558]; 3 ♀, 1.8 km E. Navai Village, old trail to Mt. Tomaniivi, 700 m, 17.621°S, 177.998°E, 30 Aug–23 Sep 2004, Malaise, E. Namatalau [FBA 531738–531740]; 1 ♀, Koroyanitu Eco Park, 0.5 km N. Abaca Village, Mt. Evans Range, 800 m, 17.667°S, 177.55°E, 7–13 Oct 2002, Malaise, L. Tuimereke [FBA 090251]. Holotype will be deposited in FNIC (currently in BPBM). Paratypes in FNIC, BPBM, and USNM.

Remarks. Three of the five species of *Lygistorrhina* with pictured wings (*L. pictipennis*, *L. cincticornis*, and *L. chaoi*) have the apex of the wing with hyaline spots and are found clustered in the eastern Asian region (Borneo, Taiwan, and Japan). In contrast, *Lygistorrhina fijiensis* and the tropical African *L. legrandi* have the apex of the wing solidly infusate and therefore appear more similar to each other than to the Asian group. An additional undescribed species is known to the senior author from Sulawesi (single male specimen in BPBM) that also has a similar pictured wing pattern that fits with the *L. legrandi* and *L. fijiensis* group.

Etymology. Named for the type locality of Fiji.

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