

Two New Species of *Dolichocephala* Macquart From Fiji (Diptera: Empididae: Clinocerinae)^{1,2}

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Abstract. Two new species of *Dolichocephala*: *D. ciwatikina*, **n. sp.** and *D. walutikina*, **n. sp.**, are described and illustrated. This represents the first record of this genus in the southwest Pacific.

INTRODUCTION

Empidoidea (exclusive of Dolichopodidae) from the southwest Pacific islands are poorly known (Smith, 1989). There has been little analysis between island groups and most records are confined to the subfamilies Tachydromiinae and Hybotinae. Other regions of the Pacific are only slightly better known; for example, 13 species are described from Micronesia (Quate, 1960). Virtually nothing has been published about the other groups of Empididae s. lat., except for a single species of *Empis* from New Caledonia (Daugeron, 2002). Although New Caledonia has been extensively surveyed, little information on the Empidoidea has been published. Among this unpublished material are several species of *Asymphyloptera* Collin (Clinocerinae) (Sinclair unpubl. data).

Three species of *Syneches* Loew have been described from Fiji (Bezzi, 1928) and several more are known from initial sortings from this Survey. Additional species from Fiji are found in the following genera: *Hemerodromia* Meigen, *Euhybus* Coquillet, *Drapetis* Meigen, *Elaphropeza* Macquart, *Austrodrapetis* Smith and two as yet unidentified hybotine genera. These groups will be analyzed in the future.

This paper describes two species of Fijian *Dolichocephala* Macquart collected by the Terrestrial Arthropod Survey of Fiji. Worldwide, 31 previously described species of *Dolichocephala* are known, with many species awaiting description from North and South America, Taiwan, Japan and eastern Asia. Species generally inhabit humid forests in hilly to mountainous regions, with adults frequenting wet depressions and wet, mossy slopes. The two new species of *Dolichocephala* as well as the New Caledonian *Asymphyloptera* represent the only records of Clinocerinae from Pacific archipelagoes. The nearest record of *Dolichocephala* is from New Guinea (Sinclair, 1995), while the record from Australia (see Smith, 1989) is in fact a recently described species of *Clinocera* Meigen (Sinclair, 2000b).

1. Contribution No. 2005-006 to the NSF-Fiji Arthropod Survey.

2. Contribution No. 2005-015 to the Pacific Biological Survey.

MATERIALS AND METHODS

This study is based on material from the Fiji National Insect Collection, Suva (FNIC), with exemplars deposited in the Bishop Museum, Honolulu (BPBM), Canadian National Collection, Ottawa (CNC) and Museum Koenig, Bonn (ZFMK). Terms used for adult structures primarily follow McAlpine (1981), except male terminalia where terms of Sinclair (2000a) are used. The following abbreviations are used in the descriptions: acr – acrostichal setulae; dc – dorsocentral bristles; MT – Malaise trap; npl – notopleural bristles; pal – postalar bristles; pprn – postpronotal bristles; presut spal – presutural supra-alar bristles; sctl – scutellar bristles.

SYSTEMATICS

Dolichocephala Macquart

Dolichocephala Macquart, 1823: 147. Type-species, *D. maculata* Macquart (monotypy) (= *Tachydromia irrorata* Fallén).

Diagnosis. This genus is identified by the position of attachment of the head high on the occiput (Fig. 1), often with white spotted wings and an extension of the subepandrial sclerite beyond the base of the clasping cercus (Sinclair, 1995). The Fijian species are characterised by possessing only four dorsocentral bristles (normally five), pale yellowish-brown colouration, and long ventral setae on at least the fore femur.

KEY TO THE FIJIAN SPECIES OF *DOLICHOCEPHALA*

1. Face light brown lacking greyish pruinescence. Frons with large light brown area between antennae and posterior ocelli, area extends to eye margins. Wing (Fig. 2) with nine spots, proximal spot in cell dm lengthened into broad streak, spot posterior to CuA₁ creating bend in vein *ciwatikina*, **n. sp.**
- . Face dark brown with greyish pruinescence. Frons with small light brown spot between antennae and anterior ocellus, width of spot subequal to width of antennal sockets. Wing (Fig. 3) with eight round spots, proximal spot in cell dm not lengthened, lacking spot posterior to CuA₁, vein straight *walutikina*, **n. sp.**

Dolichocephala ciwatikina Sinclair & Evenhuis, **new species** (Figs. 1,2,4)

Diagnosis. Face light brown lacking greyish pruinescence. Frons with large light brown area between antennae and posterior ocelli. Vertex dark with greyish pruinescence, occiput concolorous with face. Wing with nine spots, proximal spot in cell dm forming streak.



Fig. 1. *Dolichocephala ciwatikina*, n. sp., habitus. Scale bar = 1.0 mm.

Description. Male. Head. Slender, tapered ventrally. Face light brown lacking greyish pruinescence. Frons light brown between inner margins of eye and posterior ocelli. Vertex dark brown with grayish pruinescence; occiput light brown, concolorous with face. Ocellar triangle with pair of stout upturned bristles.

Thorax. Scutum brown with 3 stripes: narrow dark stripe medially expanded onto prescutellar depression; pair of wider vittae outlining dc row. Postpronotum, pleural ridge and pleurae yellowish-brown. Several very minute acr anterior to first dc; 4 dc; 1 ppn; 1 presut spal; 1 npl; 1 pal; 2 sctl. Laterotergite with several pale setulae.



Figs. 2–3. Wings of *Dolichocephala*. 2. *D. ciwatikina*, n. sp. 3. *D. walutikina*, n. sp.

Legs. Legs yellowish-brown, concolorous with pleurae, somewhat darker on tarsi. Fore femur with preapical anterior comb; 3–4 posterolateral proximal setae more than twice width of femur (Fig. 1). Mid femur with biserial row of setae beneath, posteroventral row more conspicuous, longer than width of femur.

Wing (length 1.9–2.2 mm). Narrow; infusate; single, long basal costal bristle seta present; R_4 and R_5 divergent apically; R_4 with auxiliary cross-vein to R_{2+3} ; 9 irrorations (Fig. 2) (white rounded spots) clearly separated and distinct: 2 spots each in cells r_{2+3} and dm , proximal spot in cell dm in form of broad streak longer than twice width of spots; 1 spot in cells r_4 , m_1 , m_2 and apex of r_5 ; smaller, less distinct additional spot posterior to cell dm , creating slight bend in CuA_1 .

Abdomen. Ventrums and lateral margins yellowish-brown, concolorous with pleurae; dorsum darker medially. **Terminalia** (Fig. 4). Hypandrium cone-shaped, with 2 lateral setae. Phallus arched and slightly recurved; shaft of phallus with broad, subapical hook-like process; distiphallus forming slender cap over phallus, terminating in ventrally produced processes. Epandrium oval with several long marginal posterior setae. Cercal plate with macrosetae confined to extreme apical corner. Claspering cercus L-shaped with broad base; posterior process straight, apex of process with short, stout medially directed spine-like seta. Lobe of subepandrial sclerite extended beyond epandrium acting as brace to phallus. Surstylus broadly rounded apically, short, not clearly visible laterally.

Female. Similar to male except as follows: Ventral setae of fore and mid femora shorter than width of femur, not forming distinct rows. Wing length 2.2–2.5 mm.

Types. Holotype ♂ (FNIC, FBA 059916) and 8 ♂♂, 7 ♀♀ (FBA 059901–915) and 9 ♂♂, 6 ♀♀ (FBA 080386–400) paratypes from: FIJI: **Vanua Levu:** Bua Prov. Batiqere Range, 6 km NW of Kilaka Village, Malaise, 98 m, 15.vi–28.vi.2004, FJVN58c_M02_07, 16.8067, 178.9914, Schlinger, Tokota'a (FNIC). **Other paratypes:** FIJI: **Taveuni:** Cakadrove Prov.: 2 ♂♂, 2 ♀♀, Devo Forest Reserve, 3–10.i.2003, FJ-9, MT, 800 m, 16°50'S,

179°59'E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 042909–912) (FNIC); 1♂, Devo Peak, MT, FJ-7,8,9, 10–16.i.2003, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 038650) (ZFMK); 2♂♂, 1♀, Devo Peak Radio Tower, 5.6 km SE Tavuki Village, rainforest, MT, 1200 m, 13–20.xii.2002, FJ-8, 16°50'35.7"S, 179°57'66.7"E, E. Ratu (FBA 020468–470) (BPBM); 2♂♂, same as previous, 31.x.–21.xi.2002 (FBA 005114–115) (CNC). **Vanua Levu:** Bua Prov.: 2♂♂, 3♀♀, Kilaka, FJ-58D, 28.vi.–2.vii.2004, 154 m, MT, 16°48'412"S, 178°59'017"E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 047642–646) (BPBM); 2♂♂, 2♀♀, Batiqere Range, 6 km NW Kilaka Village, MT, 146 m, 3–10.vi.2004, FJ-58A, 16°48'927"S, 178°59'110"E, P. Manuelli (FBA 040536–539) (BPBM, CNC) **Viti Levu:** Naitasiri Prov.: 1♂, 1♀, Nakobalevu Mt., FJ-4C, 24–29.x.2003, MT, 340 m, 18°03'S, 178°25'E, rainforest, M. Irwin, E. Schlinger, M. Tokota'a (FBA 025884–885) (BPBM); 1♂, 2♀♀, Veilaselase Track, 3.2 km E Navai Village, MT, 700 m, 6.vi.–15.vii.2003, FJ-11B, 17°37'27"S, 178°00'38"E, E. Namatalau (FBA 014118–120) (ZFMK). Holotype to be deposited in FNIC. Paratypes in FNIC, BPBM, CNC, ZFMK.

Additional material examined (some 35 specimens, stored in alcohol). **FIJI: Taveuni:** Cakadrove Prov.: Devo Peak Radio Tower, rainforest, MT, 1200 m, 25.ix.–2.x.2002, FJ-8, 16°51'S, 179°58'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 012591–595); ditto, 10–17.x.2002 (FBA 005262–265); ditto, 31.x.–21.xi.2002 (FBA 005131); Devo Forest Reserve, 10–16.i.2003, FJ-9, MT, 800 m, 16°50'S, 179°59'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 041420–428); 5.3 kmSE Tavuki, Devo Peak, 14–21.xi.2002, MT, 1064 m, 16.8431, 179.9681, FJTA9c_M03_07, E. Schlinger, M. Tokota'a (FBA 053640–648); 5.6 kmSE Tavuki Village, 31.x.–14.xi.2002, MT, rainforest, 1187 m, 16.843, 179.965, FJTA8a_M01_06, E. Schlinger, M. Tokota'a (FBA 056744). **Vanua Levu:** Bua Prov.: Batiqere Range, 6km NW Kilaka Village, MT, 98 m, 15–24.vi.2004, FJVN58b_M05_07, 16.8067S, 178.9914E, E. Schlinger, M. Tokota'a (FBA 074939–940); ditto, 15–28.vi.2004, 146 m, FJVN58d_M01_07, 16.8153S, 178.9864E (FBA 072306–309). All housed in FNIC, BPBM, ZFMK.

Remarks. Both species of Fijian *Dolichocephala* occur sympatrically, collected together in Malaise traps.

Etymology. The specific epithet derives from the Fijian word for nine spots, referring to the number of white spots in the wing that characterize this Fijian species.

Dolichocephala walutikina Sinclair & Evenhuis, new species

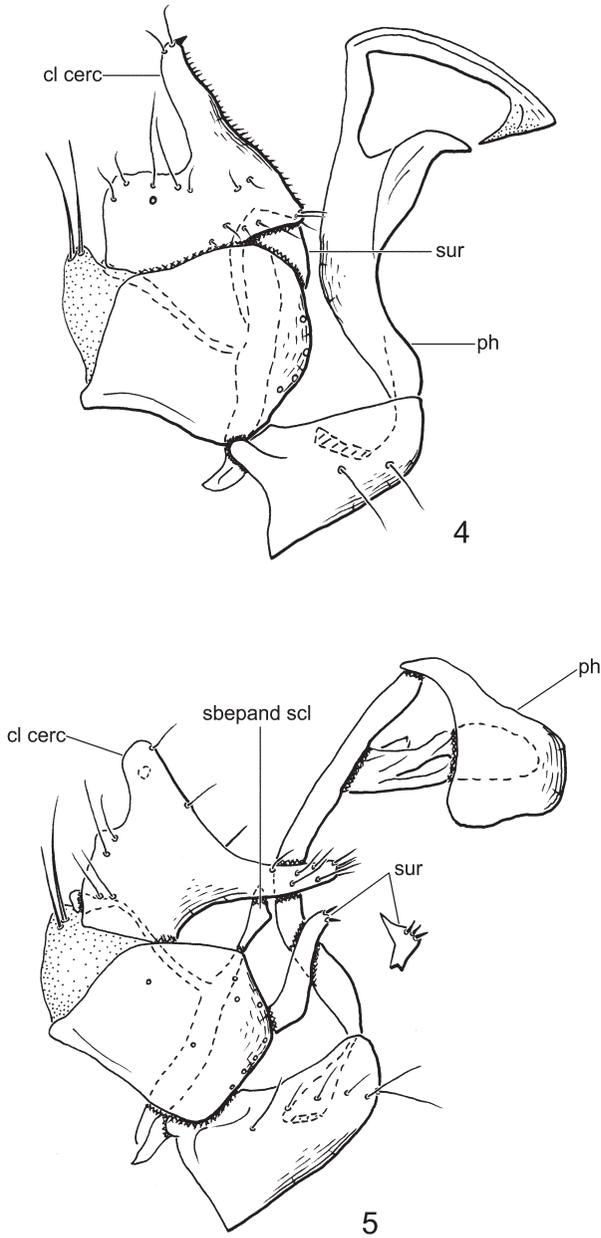
(Figs. 3,5)

Diagnosis. Face dark brown with greyish pruinescence. Frons with small light brown spot between antennae and anterior ocellus, vertex and occiput dark with greyish pruinescence. Wing with eight round spots.

Description. Male. Head. Slender, tapered ventrally. Face dark brown with greyish pruinescence. Frons light brown between antennal bases and anterior ocellus, subequal in width to width of antennal bases. Vertex and occiput concolorous with face. Ocellar triangle with pair of stout upturned bristles.

Thorax. Scutum brown with tapered dark stripe between dc rows, from anterior margin extending as narrow median vitta to scutellum. Postpronotum, pleural ridge and pleurae yellowish-brown. Several very minute acr anterior to first dc; 4 dc; 1 pprn; 1 presut spal; 1 npl; 1 pal; 2 sctl. Laterotergite with several pale setulae.

Legs. Legs yellowish-brown, concolorous with pleurae, somewhat darker on tarsi. Fore femur with preapical anterior comb; biserial row of long, slender pale setae beneath, proximal setae longer than width of femur. Mid femur with biserial row of setae beneath, posteroventral row more conspicuous, longer than width of femur.



Figs. 4-5. Male genitalia of *Dolichocephala*. **4.** *D. ciwatikina*, n. sp. **5.** *D. walutikina*, n. sp. Abbreviations: cl cerc – claspig cercus; ph – phallus; sbepand scl – subepandrial sclerite; sur – surstylus.

Wing (length 1.9–2.2 mm). Narrow; infusate; single, long basal costal bristle seta present; R_4 and R_5 divergent apically; R_4 with auxiliary cross-vein to R_{2+3} ; 8 irrorationes (Fig. 3) (white rounded spots) clearly separated and distinct: 2 spots each in cells r_{2+3} and dm ; 1 spot in cells r_4 , m_1 , m_2 and apex of r_5 . CuA_1 straight.

Abdomen. Ventrum and lateral margins yellowish-brown, concolorous with pleurae; dorsum darker medially. *Terminalia* (Fig. 5). Hypandrium cone-shaped, with 4–5 lateral setae in vertical row. Phallus strongly arched and recurved; distiphallus forming well sclerotized hooded cap with inner convoluted tubular structure. Epandrium oval with several long marginal posterior setae. Cercal plate with macrosetae confined to extreme apical corner. Claspings cercus with broad base and widely divergent apical processes; posterior process with several stout apical setae; anterior process arched medially, terminating with a short, stout, spine-like seta with jagged tip. Lobe of subepandrial sclerite extended beyond epandrium acting as brace to phallus. Surstylus finger-like in lateral view; apex attenuated to narrow point (not visible in lateral view), also bearing 2–3 stout setae.

Female. Similar to male except as follows: Ventral setae of fore and mid femora shorter than width of femur, not forming distinct rows. Wing length 2.2–2.5 mm.

Types. Holotype ♂ (FNIC, FBA 059889) and 3♂♂, 8♀♀ (FBA 059890–900) paratypes from: FIJI: **Vanua Levu**: Bua Prov. Batiqere Range, 6 km NW of Kilaka Village, Malaise, 98 m, 15.vi–28.vi.2004, FJVN58c_M02_07, 16.8067, 178.9914, E. Schlinger, M. Tokota'a (FNIC). FIJI: **Taveuni**: Cakadrove Prov.: 4♂♂, 2♀♀, Devo Forest Reserve, 3–10.i.2003, FJ-9, MT, 800 m, 16°50'S, 179°59'E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 042913–918) (CNC); 1♂, ditto, 10–17.x.2002 (FBA 005113); 2♂♂, 1♀, Devo Peak, MT, FJ-7,8,9, 10–16.i.2003, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 038647–649) (BPBM); 10♂♂, 7♀♀, Devo Peak Radio Tower, rainforest, MT, 1200 m, 13–20.xii.2002, FJ-8, 16°50'35.7"S, 179°57'56.7"E, E. Ratu (FBA 020451–467) (CNC, BPBM, ZFMK); 1♂, 1♀, 5.3 km SE Tavuki, Devo Peak, 10–17.x.2002, MT, 1064 m, 16.8431, 179.9681, FJTA9c_M03_03, E. Schlinger, M. Takata'a (FBA 052117–118) (FNIC); 3♂♂, 3♀♀, 5.6 km SE Tavuki, 3–10.i.2003, MT, rainforest, 1187 m, 16.843, 179.965, FJTA8a_M01_12, E. Schlinger, M. Takata'a (FBA 052686–691) (BPBM). **Vanua Levu**: Bua Prov.: 4♂♂, 3♀♀, Kilaka, FJ-58D, 28.vi.–2.vii.2004, 154 m, MT, 16°48'412"S, 178°59'017"E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 047635–641) (CNC); 1♀, Kilaka, FJ-58E, 3–10.vi.2004, 98 m, MT, 16°48'412"S, 178°59'290"E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 034107) (ZFMK); 2♂♂, 10♀♀, Batiqere Range, 6km NW of Kilaka Village, MT, 146 m, 3–10.vi.2004, FJ-58A, 16°48'39"S, 178°59'17"E, P. Manuelli (FBA 040540–551) (FNIC, BPBM). **Viti Levu**: Naitasiri Prov.: 1♀, Navai Village, Eteni, FJ-11C, 9–20.xii.2003, MT, 700 m, 17°37'S, 177°59'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 032344) (BPBM). Holotype to be deposited in FNIC. Paratypes in FNIC, BPBM, CNC, ZFMK.

Additional material examined (some 171 specimens, stored in alcohol). FIJI: **Taveuni**: Cakadrove Prov.: Devo Peak Radio Tower, rainforest, MT, 1200 m, 25.ix.–2.x.2002, FJ-8, 16°51'S, 179°58'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 012596–608); ditto, 2–10.x.2002 (FBA 021365–366); ditto, 10–17.x.2002 (FBA 005266–281); ditto, 31.x.–21.xi.2002 (FBA 005132–167); Devo Forest Reserve, 10–16.i.2003, FJ-9, MT, 800 m, 16°50'S, 179°59'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 041337–394); Taveuni Estate, FJ-7, 25.ix.–2.x.2002, MT in garden, 140 m, 16°50'S, 179°59'E, M. Irwin, E. Schlinger, M. Tokota'a (FBA 005229); 5.3 kmSE Tavuki, Devo Peak, 14–21.xi.2002, MT, 1064 m, 16.8431, 179.9681, FJTA9c_M03_07, E. Schlinger, M. Tokata'a (FBA 053611–628); 5.6 km SE Tavuki Village, 31.x.–14.xi.2002, MT, rainforest, 1187 m, 16.843, 179.965, FJTA8a_M01_06, E. Schlinger, M. Tokata'a (FBA 056740–743). **Vanua Levu**: Bua Prov.: Kilaka, FJ-58E, 24.vi.–21.vii.2004, 98 m, MT, 16°48'412"S, 178°59'290"E, M.E. Irwin, E. Schlinger, M. Tokota'a (FBA 028296); 6 km NW Kilaka, Batiqere Range, 13–26.iv.2004, MT, 146 m, 16.8153, 178.9864, FJVN58e_M04_02, E. Schlinger, M. Tokota'a (FBA 059343–344);

ditto, 3–15.vi.2004, 113 m, FJVN58c_M02_06, 16.7317S, 178.9997E (FBA 069200–208); ditto, 15–24.vi.2004, 98 m, FJVN58b_M05_07, 16.8067S, 178.9914E (FBA 074941); ditto, 15–28.vi.2004, 146 m, FJVN58d_M01_07, 16.8153S, 178.9864E (FBA 072310–316). All housed in FNIC, BPBM, ZFMK.

Etymology. The specific epithet derives from the Fijian word for eight spots, referring to the number of white spots in the wing that characterize this Fijian species.

DISCUSSION

The isolated round white spots that characterize these two species are typical of species originating from the Oriental Region. Whether this distinctive pattern (as opposed to numerous less distinct spotting, or spots mostly absent) is phylogenetically informative remains to be investigated on a world basis. The general shape of the clasping cercus with its apical, short, stout spine appears to be very distinct and known also from species of the Mediterranean region. But since so little is known about the species of eastern Asia, similar species most certainly occur in more immediate continental areas and any conclusion concerning relationships is very premature at this time.

ACKNOWLEDGMENTS

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