

Two new species of *Proceroplatus* Edwards (Diptera: Keroplataidae) from Fiji^{1,2}

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Abstract. Two new species of the platyurine keroplatid genus *Proceroplatus*, *P. pectinata*, n. sp. and *P. moala*, n. sp., from Fiji are described and illustrated. These mark the first records of the genus from these islands. *Proceroplatus pectinatus* is only the second species known in the genus possessing pectinate antennae. A key to the species of Australasian/Oceanian *Proceroplatus* is given.

INTRODUCTION

The genus *Proceroplatus* Edwards is comprised of 35 previously described species distributed primarily pantropically with the majority of species known from the Neotropical region (Papavero, 1978). The genus is known only from three described species in the Australian/Oceanian regions: *P. graphicus* Skuse (Australia), *P. priapus* Matile, and *P. scalprifer* Matile (the latter two from New Caledonia). Matile (1988) alluded to several undescribed species from Papua New Guinea, which are not treated here. His keys to New Caledonian taxa can be used to identify *Proceroplatus* and closely related genera in the southern Pacific and Melanesia.

Examination of numerous keroplatids collected in an extensive Malaise-trapping program throughout the larger islands of the Fiji archipelago supported by the Schlinger Foundation (started in 2002) and the National Science Foundation (started in 2004) have revealed two new species: *P. pectinata*, n. sp. and *P. moala*, n. sp. These are the first records of the genus from Fiji and the first named taxa in Melanesia. The genus is apparently locally uncommon in this region as a total of only 28 specimens for both species have been seen thus far among thousands of keroplatids and mycetophilids collected in the Fiji Malaise trapping programs; and the type series of other three described species from surrounding areas (Australia, New Caledonia) are relatively small.

Matile (1996) gave biological notes on the first pectinate species discovered in the genus, *P. belluus* Matile from Panama, where the immatures of the species were found to be myrmecophilous in the ant-plant *Besleria* (Gesneriaceae). The biology of the pectinate species recorded here is as yet unknown but could be similar as ant-plants of the family Rubiaceae (*Hydnophytum* and *Myrmecodia*) do exist in the areas where the flies were trapped (E. Sarnat, pers. comm.).

MATERIALS 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-fund-

1. Contribution No. 2006-006 to the NSF-Fiji Arthropod Survey.
2. Contribution No. 2006-005 to the Pacific Biological Survey.

ed “Fiji Biodiversity of Arthropods” study, primary types of which will be deposited in the Fiji National Insect Collection, Suva (FNIC). Descriptive terminology follows Matile (1996) and Sølvi *et al.* (2000).

SYSTEMATICS

KEY TO THE SPECIES OF AUSTRALASIAN/OCEANIAN *PROCEROPLATUS* EDWARDS

1. Base of vein Rs with distinct cloud of yellowish brown infuscation extending basally almost to level of humeral crossvein 2
- . Small spot of infuscation at base of vein Rs, infuscation not extending to humeral crossvein ... (New Caledonia) 4

2. Cell m1 with clear spot in middle of infuscation (Fig. 4); band of infuscation in cells cup and a1 interrupted ... (Australia) **graphicus** Skuse
- . Cell m1 without clear spot (Figs. 5–6); band of infuscation in cells cup and a1 not interrupted ... (Fiji) 3

3. Antenna pectinate (Fig., 1); infuscation in apical portion of cell cua1 connected to that in cell cup; infuscation in cell r5 separate from vein R₄ (Fig. 5); hypopygium with bidentate gonostylus, tooth on medial surface acute (Fig. 8) **pectinatus** Evenhuis, **n. sp.**
- . Antennae elongate moniliform (Figs. 2–3); infuscation in apical portion of cell cua1 separate from that in cell cup; infuscation in cell r5 almost reaching vein R₄ (Fig. 6); hypopygium with gonostylus enlarged apically into flange-like structure in association with bluntly dentate spine, tooth on medial surface thick, truncate apically (Fig. 9) **moala** Evenhuis, **n. sp.**

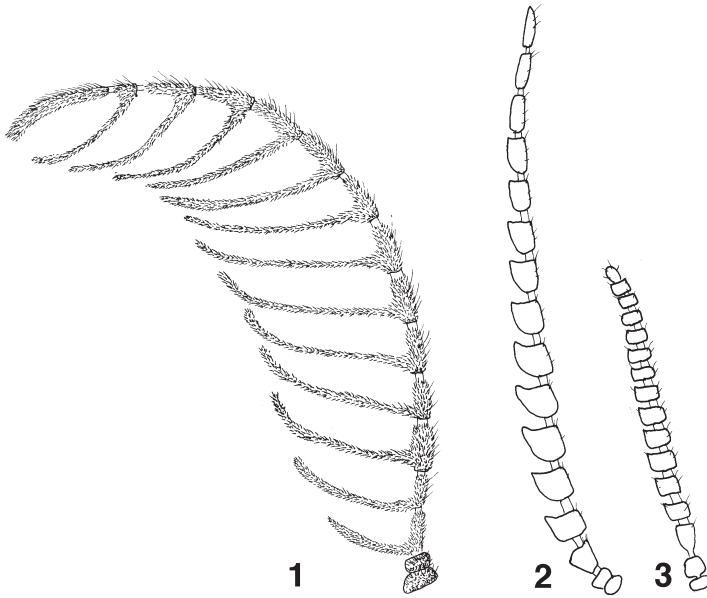
4. Face and palpi brown to brownish black; gonostylus with apex elongate, hook-shaped **scalprifer** Matile
- . Face and palpi yellowish; gonostylus with apex foreshortened, acute apically, not hook-shaped **priapus** Matile

Proceroplatus pectinatus Evenhuis, new species

(Figs. 1, 5, 8)

Diagnosis: Is closest to *P. moala*, n. sp. but can be distinguished from it by the pectinate antennae and the bidentate apex of the gonostylus. The only other known *Proceroplatus* species with pectinate antennae, *P. belluus*, from Panama, differs from *P. pectinatus* in having wing patterning without clear areas in the apical portion of the radial area.

Description: Lengths: Body: 3.8–4.2 mm; wing: 3.5–4.0 mm. **Male. Head.** Occiput brownish black. Three ocelli near middle of frons, outer pair large, medial punctiform. Ocellar calli black. Frons dark brown. Antennae (Fig. 1): scape and pedicel discoid, scape brownish black, pedicel yellow. Flagellum: segments 1–13 with long and simple pectinations bearing dense fine setae, terminal segment (14) recurved towards, and almost as long as, pectination of penultimate segment (13). First fla-



FIGURES 1–3. *Proceroplatus* antennae. 1. *P. pectinatus*, n. sp. 2. *P. moala*, n. sp., male, vestiture removed. 3. *P. moala*, n. sp., female, vestiture removed.

gellomere yellow, the following brownish yellow, the pectinations brown, narrowly yellow at base. Face brownish yellow, palpi brownish black, last palpomere yellow.

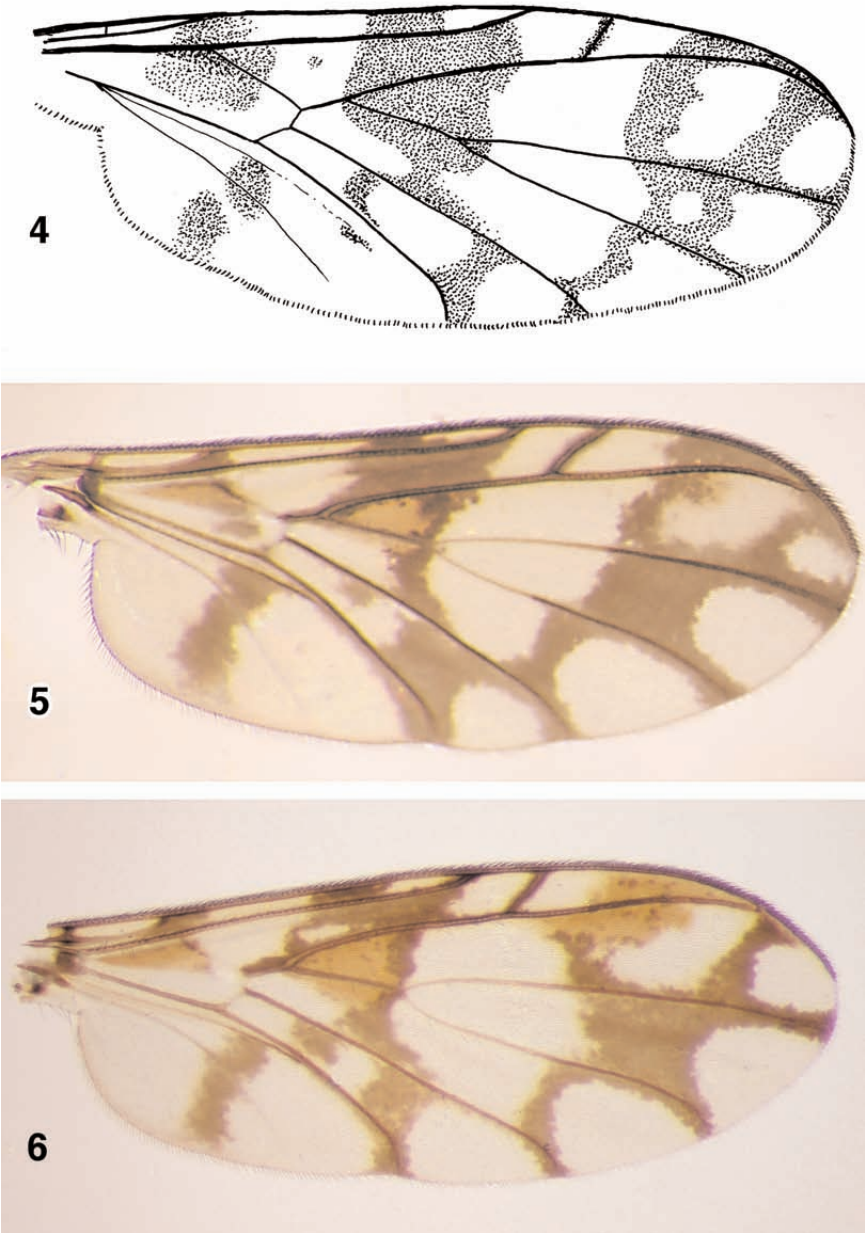
Thorax. Prothorax, scutum, scutellum, and mediotergite yellow. pleurae and laterotergite yellow, anepisternum brownish, with group of small dorsal setae, katapisternum light brown. Laterotergite with long erect posterodorsal setae. Halteres yellow.

Legs. Yellow, tarsi darkened. Spurs black, those on fore and outer ones on mid and hind legs minute, inner ones on mid and hind legs very long. Protarsus longer than tibia (5.5:4).

Wing (Fig. 5). Grayish yellow hyaline with brown and yellow pattern of infuscations. Cell c with infuscation basally extending to end of Sc. Band of brown infuscation from C to M_{1+2} , continuing to CuA_1 via thin band, with yellowish color at base of cell r5. Vein R_4 ending in costa, infuscated brown. Apical band of brown infuscation from apex of C to CuA_2 , with two clear spots in cell r5 and apical hemispherical clear areas in cells m1, m2, and cua1. Thin basal band of brown infuscation from middle of CuA_2 to posterior wing margin. Cell bm with two spots of infuscation, yellowish spot of color from Rs extending basally toward base of cell bm+cu, smaller brown spot below it. Sc ending in C at origin of Rs. Infuscation at apex of cell cua1 distinctly connected to that in cell cup.

Abdomen. Tergite I yellow, II yellow, apex slightly brownish, III brown, indistinctly yellow slightly before posterior margin, IV yellow dorsally, with narrow, postbasal brown band, V yellow, VI–VII brown, dark yellow basally. Sternites with same pattern as tergites.

Hypopygium (Fig. 8). Yellow basally, brown apically. Ninth tergite shorter than gonocoxite, wider than long, concave basally, slightly convex apically. Cerci wide, subtriangular with rounded corners. Gonocoxite simple, with wide triangular ventral notch, with long hairs at posteromesal corner. Gonostylus long, thin, with long bidentate apex, mesal surface of gonocoxite with long, thin



FIGURES 4–6. *Proceroplatus* wings. 4. *P. graphicus* Skuse (redrawn from Skuse). 5. *P. pectinatus*, n. sp. 6. *P. moala*, n. sp.

spine-like tooth, basally with long thin mesally directed projection, projection with blunt apex.

Female. As in male except: flagellomeres and pectinations slightly more compact.

Types. Holotype ♂ (FBA501127) and 4♂ paratypes (FBA501128, 501148–501149) from FIJI: **Taveuni:** 5.3 km SE Tavuki Village, Mt Devo, 1054 m, 14–28 Jan 2005, Malaise, P. Vodo. *Other paratypes:* **Taveuni:** 2♂, 3.2 km NW Lavena Village, Mt Koronibuabua, 234 m, 16.855°S, 179.801°W, 4–18 Jan 2004, Malaise, B. Soroalau (FBA092534–092535); 3♂, 3♀, 5.6 km SE Tavuki Village, Devo Peak, 1187 m, 11 Feb–22 Mar 2005, Malaise, P. Vodo (FBA501129, 501141–501145); 1♂, Tavuki Village, Devo Peak, 734 m, 16.831°S, 179.98°W, 14 Jul–14 Aug 2004, Malaise, p. Vodo (FBA091482). **Viti Levu:** 1♂, 4 km NW Lami Town, Mt Korobaba, 260 m, 13 Dec 2004–3 Jan 2005, 18.104°S, 178.301°E, Malaise, K. Koto (FBA501146). Holotype to be deposited in FNIC. Paratypes in FNIC and BPBM.

Remarks. This is only the second species of *Proceroplatus* with pectinate antennae. The other species, *P. belluus*, was described by Matile (1996) from Panama, which is the undescribed *Proceroplatus* with pectinate antennae that Matile (1981) was referring.

Proceroplatus moala Evenhuis, new species

(Figs. 2–3, 6, 7, 9)

Diagnosis: Closest to *P. scalprifer* but can be separated from it by the yellowish infuscation in cell bm (absent or restricted to faint dot in *P. scalprifer*) and the shape of the gonostylus with an enlarged diamond-shaped plate-like structure apically (apex of gonostylus in *P. scalprifer* large, tooth-like). It can be separated from the other known Fijian species, *P. pectinatus* by the elongate moniliform antennal segments and hypopygial shapes.

Description: Lengths: Body: 3.5–4.0 mm; wing: 3.3–3.8 mm. **Male.** *Head.* Occiput brownish black. Three ocelli near middle of frons, outer pair large, medial punctiform. Ocellar calli black. Frons dark brown. Antennae (Fig. 2): scape and pedicel discoid, scape brownish black, pedicel yellow. Flagellum: moniliform, brown, segments 1–8 slightly produced distally on frontal surface; segments 9–14 cylindrical. Face brownish yellow, palpi brownish black.

Thorax. Prothorax, scutum, scutellum, and mediotergite yellow. Pleurae and laterotergite yellow, anepisternum brownish, with group of small dorsal setae, katepisternum light brown. Laterotergite with long erect posterodorsal setae. Halteres yellow.

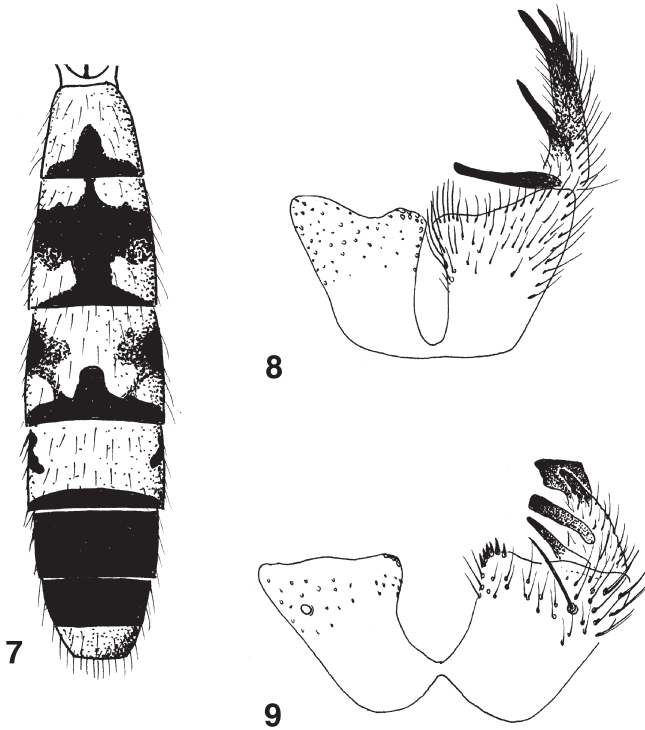
Legs. Yellow, tarsi darkened. Spurs black, those on fore and outer ones on mid and hind legs minute, inner ones on mid and hind legs very long. Protarsus slightly shorter than tibia.

Wing (Fig. 6). Grayish yellow hyaline with brown and yellow pattern of infuscations. Cell c with infuscation basally extending to end of Sc. Band of brown infuscation from C to M₁₊₂, continuing to CuA₁ via thin band, with yellowish color at base of cell r5. Vein R₄ ending in costa, infuscated brown. Apical band of brown infuscation from apex of C to CuA₂, with two clear spots in cell r5 and apical hemispherical clear areas in cells m1, m2, and cua1, yellowish color also connecting brown band in cell r4 with vein R₄. Cell bm+cu with one spot of infuscation, yellowish spot from Rs extending basally toward base of cell bm+cu. Sc ending in C at origin of Rs. Infuscation in cell cua1 not distinctly connected with that in cell cup (at most thinly connected by suffusion of vein CuA₁).

Abdomen (Fig. 7). Tergite I yellow with brown triangular spot posteromedially, II yellow basally and subapically with brown pattern medially, III–IV yellow with brown spot dorsolaterally and posteromedially, V–VI brown, VII yellow. Sternites with same pattern as tergites.

Hypopygium (Fig. 9). Yellow. Ninth tergite shorter than gonocoxite, wider than long, concave basally, slightly convex apically. Cerci wide, subtriangular with rounded corners. Gonocoxite simple, with wide triangular ventral notch, with short spicules at posteromesal corner. Gonostylus subtriangular, with short bifid apex, mesal projection tooth-like, lateral projection diamond-shaped, spade-like; mesal surface of gonocoxite with strap-like projection, truncate apically, basally with thin tapered mesally directed projection, projection with sharp apex.

Female. As in male except antennal flagellomeres shorter.



FIGURES 7–9. 7. *Proceroplatus moala*, n. sp., abdomen, dorsal view. 8–9. *Proceroplatus* male genitalia. 8. *P. pectinatus*, n. sp. 9. *P. moala*, n. sp.

Types: Holotype ♂ (FBA 501133) and 2♂, 2♀ paratypes (FBA501131–501132, 501134) from FIJI: **Viti Levu:** Koroyanitu Eco Park, 1 km E. Abaca Village, 800 m, Savuione trail, 16–29 Nov 2004, Malaise, L. Tuimereke. **Other paratypes:** **Gau:** 2♂, 4.0 km SE Navukailagi Village, Mt. Delaco, 400 m, 17°37'S 177°59'E, 7–19 Apr 2005, Malaise, U. Racule (FBA505003–505004). **Viti Levu:** 1♂, 4 km NW Lami Town, Mt. Korobaba, 250 m, 15 Nov–1 Dec 2004, Malaise 4, K. Koto (FBA501136); 1♂, same data, 400 m, 1–13 Dec 2004, Malaise 3, K. Koto (FBA 501135); 1♀, 2 km E Navai Village, old trail to Mt Tomaniivi, 700 m, 18 Oct–5 Nov 2004, 17.521°S, 178.000°E, Malaise 3, E. Namatalau (FBA501139); 1♀, same data, 17.521°S, 179.998°E, 700 m, 30 Oct–23 Nov 2004, Malaise 4 (FBA501137); 1♀ Nadarivatu, 850 m, 8–13.1963, C.M. Yoshimoto (BPBM). Holotype to be deposited in FNIC. Paratypes in FNIC and BPBM.

Etymology. The species is named for Moala Tokota'a who has been working for the Schlinger Foundation and NSF projects since 2002 in assisting with logistics, collecting, and conservation education with Fijian villagers. His superb collecting efforts have been essential to the success of this project. The name is treated as a noun in apposition.

ACKNOWLEDGEMENTS

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