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New species of the ant genus *Metapone* FOREL, 1911: first records from New Caledonia and Vanuatu (Hymenoptera: Formicidae)

Robert W. TAYLOR



Abstract

The new species *Metapone kanak* sp.n. and *M. nivanuatu* sp.n. are described respectively from New Caledonia and Vanuatu extending the known range of the genus. Their affinities and biology are reviewed.

Key words: Formicidae, Myrmicinae, Isoptera, Termites, ant-termite inquilinism, taxonomy, new species, biogeography.

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Introduction

Metapone kanak sp.n. and *M. nivanuatu* sp.n. are described below from New Caledonia and Vanuatu (= New Hebrides) respectively, with notes on their distinction from other recognized Melanesian and Australian *Metapone* species. These records considerably extend the known distribution of the genus, which otherwise ranges from Angola to Madagascar, Sri Lanka, archipelagic Southeast Asia, the Philippines, Micronesia, New Guinea, the Solomon Islands, Fiji, and Eastern Australia. Almost one quarter of the known species are Australian and the highest known species density is in tropical north Queensland. There are twenty-eight recognized species, fourteen described since 2015 (TAYLOR & ALPERT 2016). All previously-named species discussed here were authored by Taylor and Alpert. *Metapone* species are considered to be termite predators. All documented colonies and worker specimens were collected from rotting logs, usually within or adjacent to termite nests. Dispersing alate gynes have been previously collected from flight intercept traps or attracted to light.

Methods

Measurements were prepared using a Zeiss Stemi 305 stereomicroscope with digital stage micrometer at 40× magnification: **TL** = Aggregate total length (head and mandibles + mesosoma + waist nodes + gaster, measured in lateral view). **HL** = Head Length from the occipital midline to limits of any clypeal projection(s) (frontal view). **HW** = Maximum head width (frontal view). **CI** = Cephalic Index ($HW \times 100 / HL$). **CpL** = Clypeal length from anterior to posterior clypeal borders, the specimen positioned to maximize the measurement. **CpI** = Clypeal index ($CpL \times 100 / HL$). **MSL** = Length of mesosoma, lateral view, from anterodorsal point of pronotal profile to posterior limit of propodeum. **PML** = Promesonotal length at dorsal midline, excluding anterior declivity. **PMW** = Promesonotal width, across shoulders (dorsal view). **PMI** = Promesonotal index ($PML \times 100 / MSL$). **PDW** = Maximum width of propodeum, dorsal view. **PetL** = Maximum length of petiolar dorsum,

including posterolateral extensions. **PetW** = Maximum dorsal width of petiolar node. **PetH** = Maximum height of petiolar node measured directly between its dorsal and ventral extremities, lateral view including subpetiolar extension. **PpetL** = Maximum length of postpetiolar dorsum, including antero- or posterolateral extensions. **PpetW** = Maximum width of postpetiolar dorsum, dorsal view. **PpetH** = Maximum height of postpetiole measured directly between its dorsal and ventral extremities. **GW** = Maximum width of first gastral segment, dorsal view.

Illustrations are extended focus (Z-stack) compilations prepared using a Leica DFC500 camera mounted on a Leica M205C microscope. The stacked images were processed using Leica Application Suite V4.3 (version 4.9) and Adobe Photoshop Elements 14.

Metapone kanak sp.n.

(Figs. 1 - 5)

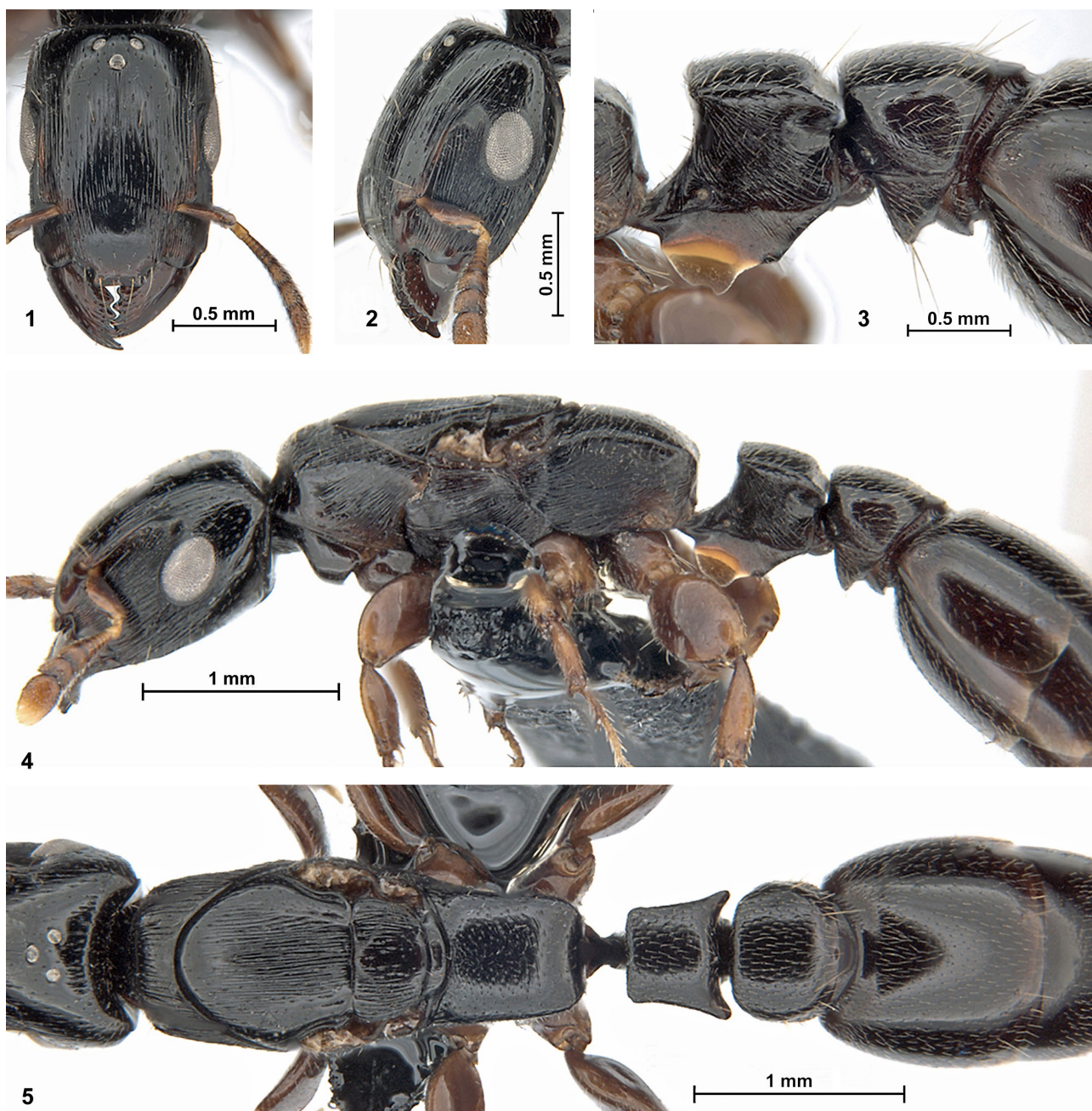
Type locality: New Caledonia: South end of Col de Petchécara, 21° 34' S, 166° 07' E.

Type deposition: Queensland Museum, Brisbane (Type number T239620, the specimen for future deposition in Muséum national d'Histoire naturelle, Paris).

Material examined: Known only from the holotype alate gyne collected at the type locality by flight intercept trap, G.B. Monteith, 22.XI.2003 to 28.I.2004. The wings have been removed and are mounted with the specimen.

In the TAYLOR & ALPERT (2016: 525) key to the Micronesian, Melanesian and Pacific *Metapone* species, *M. kanak* sp.n. runs to the terminal couplet separating the New Guinean *M. enigmatica* TAYLOR & ALPERT, 2016 and the Fijian *M. manni* TAYLOR & ALPERT, 2016, which are also known only from alate gynes. Characters distinguishing the three taxa are discussed below.

Gyne diagnosis: General features, morphology, bodily proportions, sculpturation, pilosity and color as in the accompanying figures. Wing venation matching that of



Figs. 1 - 5: *Metapone kanak* sp.n., holotype gyne. Standard views.

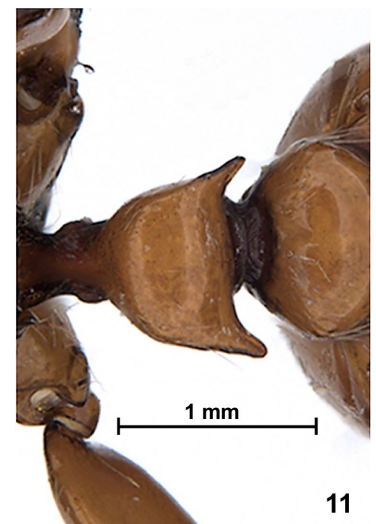
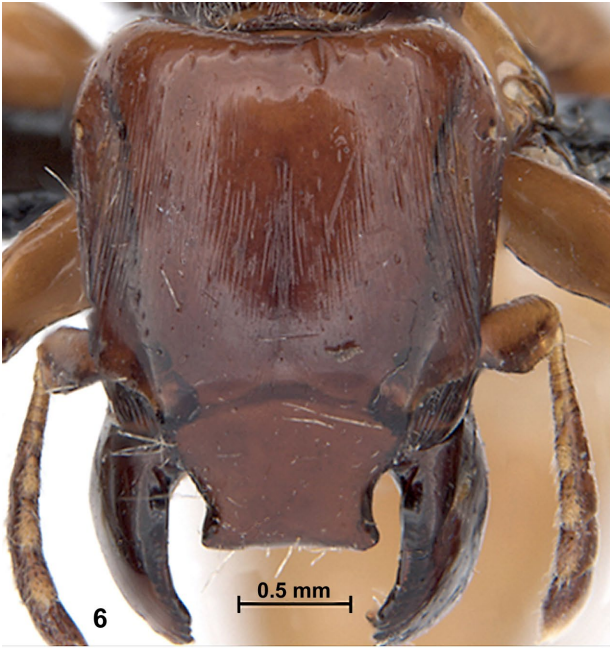
Metapone balinensis TAYLOR & ALPERT, 2016 and four other species illustrated by TAYLOR & ALPERT (2016). Subpetiolar structure distinctive: posterior subpetiolar face inclined strongly anteroventrally, in profile fully $\frac{2}{3}$ as long as the ventral subpetiolar edge; subpetiolar angle as a result slightly exceeding a right-angle. Subpetiolar extension translucent, relatively large, its base nearly as long as the ventral subpetiolar edge; shape as illustrated. Dimensions (mm): TL: ca 6.7; HL: 1.32; HW: 1.03; CI: 78; CpL: 0.49; CpI: 37; MSL: 2.16; PetL: 0.50; PetW: 0.60; PetH: 0.79; PpetL: 0.50; PpetW: 0.64; PpetH: 0.65; GW: 1.08.

Etymology: The name (a noun in apposition) celebrates the indigenous Kanak people of New Caledonia.

Notes: The *Metapone enigmatica* type is larger than that of *M. kanak* sp.n., with a relatively broad head and quite different clypeal and petiolar structure (TL 8.8 mm,

HW 1.48 mm; CI 85) (TAYLOR & ALPERT, 2016, figs. 91 - 95). *Metapone manni* is a generally larger species with dissimilar petiolar structure, but similar head proportions (holotype and sole paratype: TL 7.1, 7.4; HW 1.02, 1.09; CI 77; *ibid.*, figs. 96 - 100). The holotype of gyne-based *M. salomonis* (San Cristobel Island (= Makira), Solomon Islands) is smaller (HW 0.87 mm) and otherwise very different (*ibid.*, figs. 106 - 110). The known Australian *Metapone* species (*ibid.*, pp. 533 - 544) are all clearly taxonomically distinct from *M. kanak* sp.n.

Termite associates: The termite genera *Microcerotermes* (Termitidae), *Neotermes*, and *Procryptotermes* (both Kalotermitidae) were reported from New Caledonia without indication of the names or numbers of species by BESS (1970, table III, p. 469). Any of their constituent species could be hosts for *Metapone kanak* sp.n. (see TAYLOR & ALPERT, 2016: 502 for notes on *Metapone* / termite associations).



Figs. 6 - 11: *Metapone nivauatu* sp.n., holotype worker. Standard views.

***Metapone nivanuatu* sp.n.**

(Figs. 6 - 11)

Type locality: Vanuatu: Malekula Island: South West Bay, 16° 31' S, 167° 27' E.

Type deposition: Australian National Insect Collection, Canberra (Type No. 32-069954).

Material examined: Known only from the holotype worker collected at the type-locality: ex rotten log, swamp forest with sago and *Hibiscus tiliaceus*, K. E. Lee, 9.X.1971, Royal Society New Hebrides Expedition, NH 64.

Lee targeted termites during the Royal Society expedition, so the type was probably collected associated with termites.

The above data are from two labels prepared after collection. The main tag was printed on inappropriate paper, the (?coated) surface of which released many white fragments into the storage ethanol. Some particles still adhere to the mounted *Metapone nivanuatu* holotype.

Relationships: *Metapone nivanuatu* sp.n. most closely resembles the unique holotype of the divergent Papua New Guinean species *M. philwardi* TAYLOR & ALPERT, 2016: 530, figs. 101 - 105: Type-locality: 17 km S of Kokoda, 8° 52' S, 147° 44' E, which has the following dimensions (mm): TL: ca 7.5; HL: 1.64; HW: 1.28; CI: 78; CpL: 0.61; CpI: 37; MSL: 1.86; PML: 1.21; PMW: 0.86; PMI: 65; PDW: 0.73; PetL: 0.53; PetW: 0.57; PetH: 0.95; PpetL: 0.44; PpetW: 0.86; PpetH: 0.61; GW: 1.38 (TAYLOR & ALPERT 2016: 531).

Worker diagnosis: General features as in the accompanying figures. Substantially larger than the *Metapone philwardi* holotype (compare measurements and indices above with those below: the standard dimensions TL, HW, MSL, and GW are all 1.4 to 1.5 times greater than those of *philwardi*). Anterior border of clypeal rostrum very slightly concave and squarely transverse; lateral borders moderately deeply concave, so that the anterolateral corners of the sclerite are sub-nodulate. Petiolar dorsum relatively broad compared to *M. philwardi*, with larger, more pronounced posterodorsal extensions. Sculpturing overall less intense than in *philwardi*: Mandibles smooth and shining. Clypeal rostrum smooth and shining (versus finely, densely longitudinally striate, except along the immediate anterior border in *philwardi*). Longitudinal striae of frons more coarse, less abundant and less regular than in *M. philwardi*. Promesonotum with a few somewhat effaced vestigial medial striae, otherwise unsculptured (versus finely and entirely longitudinally striate). Sides of mesosoma longitudinally and largely diagonally striate (inclined forwards); propodeal declivity, petiole, postpetiole and gaster smooth and shining (as in *M. philwardi*). Subpetiolar extension (Fig. 7) small, subtriangular, slightly hooked posteriorly; basally shorter and less-extended than in *M. philwardi* (TAYLOR & ALPERT 2016: fig. 105). Colour pale brown, somewhat similar to *M. philwardi* but less brightly

golden. The pilosity of the holotype is largely abraded and damaged, so comparison with *M. philwardi* is not possible. Dimensions (mm): TL: ca 10.6; HL: 2.39; HW: 1.95; CI: 62; CpL: 1.00; CpI: 42; MSL: 2.71; PML: 1.38; PMW: 1.33; PMI: 51; PDW: 1.05; PetL: 0.68; PetW: 0.92; PetH: 0.84; PpetL: 0.68; PpetW: 0.90; PpetH: 0.84; GW: 1.98.

Etymology: The name is a noun in apposition acknowledging the indigenous Nivanuatuan people.

Notes: Because of its colour, reduced subpetiolar structure and large size this distinctive species fails the Taylor & Alpert key to the Micronesian, Melanesian and Pacific species of *Metapone* (2016: 525), and the key discriminating the Australian taxa (2016: 533). None of the Australian *Metapone* species are even remotely similar to *M. nivanuatu* sp.n.

The relationships of *Metapone nivanuatu* are New Guinean (through affinity with *M. philwardi*) rather than Australian. LEE (1975) remarked that in general "It might be concluded that New Guinea is the primary source of immigrants that make up the New Hebrides biota".

Termite associates: GROSS (1975: 392, tabs. 1 & 2) reported 12 Vanuatuan termite species (five of them endemic) in seven genera. At least five species in three families (Termitidae, Kalotermitidae, Rhinotermitidae) were listed from Malekula Island (ibid., tab. 9). No scientific names were given for the species or genera. Any one of them could provide a host for *Metapone nivanuatu* sp.n. (see TAYLOR & ALPERT 2016: 502).

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