

***Odontomachus yamanei* sp.n. (Hymenoptera: Formicidae),
a spectacular, previously misidentified ant species
from Guadalcanal, Solomon Islands**

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Abstract

A new trap-jaw ant species, *Odontomachus yamanei* sp.n. is described from Guadalcanal, Solomon Islands. It belongs to the *O. saevissimus* species group and has been previously misidentified as *O. saevissimus* SMITH, 1858.

Key words. Formicidae, Ponerinae, *Odontomachus*, ants, new species, endemic.

Zusammenfassung

Odontomachus yamanei sp.n., eine neue Schnappkieferameisenart von der Insel Guadalcanal (Salomonen), wird beschrieben. Sie ist der *O. saevissimus*-Artengruppe zuzuordnen und wurde in der Vergangenheit als *O. saevissimus* SMITH, 1858 fehlbestimmt.

Introduction

Odontomachus LATREILLE, 1804 is a genus of the Ponerinae (BOLTON 2003) and contains 73 extant and three valid fossil species (BOLTON 2023). It is widely distributed in tropical and subtropical regions, with its highest species numbers in the Neotropics and Malesia (see BROWN 1976). WILSON (1959) was the first to study the *Odontomachus* species of Melanesia in detail. He paid special attention to his “*saevissimus* group” and the variations he observed. BROWN (1976) did a worldwide classification, defined the *Odontomachus saevissimus* species group in a new way, and included five species distributed from the Moluccas to the Solomon Islands: These are *O. saevissimus* SMITH, 1858 described from Seram, Moluccas, and four species from New Guinea: *O. opaculus* VIEHMEYER, 1912, *O. montanus*, *O. imperator* EMERY, 1887, and *O. rufithorax* EMERY, 1911. These species possess well defined temporal ridges and extraocular furrows, and the petiole has an “extremely attenuated form”, i. e., it is anteriorly petiolate (cf. Fig. 2). BROWN (1976) provided a key to species.

Odontomachus saevissimus has several synonyms: WILSON (1959) synonymized *O. imperator* var. *tauerni* STITZ, 1925 (Seram, Moluccas) and *O. transversostriatus* DONISTHORPE, 1941 (Yapen Island), BROWN (1976) *O. saevissimus* var. *linae* DONISTHORPE, 1940 (New Guinea).

Odontomachus saevissimus was already recorded from the Solomon Islands by WILSON (1959), but he did not list examined specimens and his records likely refer to *O. emeryi* MANN, 1919, a taxon described from Santa Isabel Island and currently considered a synonym of *O. rufithorax*. In addition, WILSON (1959) described *O. gressitti* as new; the holotype originates from North-eastern New Guinea, but the paratype from Guadalcanal. According to BROWN (1976), this paratype belongs to *O. saevissimus*, and the description

by WILSON (1959) suggests that it might be the species herein described as new. SARNAT et al. (2013) catalogued *O. saevissimus*; they referred to the two literature records and to specimens in the Australian National Insect Collection, Canberra. According to their checklist, three species of *Odontomachus* occur in the Solomon Islands: the widespread *O. simillimus* SMITH, 1858 (confirmed), *O. rufithorax* (refers to *O. gressitti* types), and *O. saevissimus* (probably refers to *O. yamanei* sp.n.).

We compared specimens from Guadalcanal with specimens of *O. saevissimus* from the Moluccas and recognized heterospecificity, the first sample representing an undescribed species.

Material and methods

The description of the new species is based on eleven mounted specimens from the first author's collection. For comparison, we studied two specimens from Ambon Island, Moluccas, deposited in the Natural History Museum Vienna (MAYR 1862: p. 711, "Amboina"), and the illustrations of types of valid species and synonyms provided by ANTWEB (2023).

Measurements and indices:

- TL Total length. Length of entire ant, measured in dorsal view with head stretched out, from anterior margin of mandible to apex of abdomen.
- HL Head length. Maximum length of head in full-face view, excluding mandibles, measured from anterior-most point of clypeal margin to posterior-most point of head vertex, parallel to midline.
- HW Head width. Maximum width of head in full-face view.
- CI Cephalic index. $HW / HL \times 100$.
- MdL Mandible length. Maximum length of mandible in frontal view of head, measured from mandibular insertion to apex.
- MdI Mandible index. $MdL / HL \times 100$.
- SL Scape length. Maximum length of antennal scape in dorsal view, excluding basal constriction.
- SI Scape index. $SL / HW \times 100$.
- MsL Mesosoma length. Maximum length of mesosoma, measured in lateral view, diagonal from cervical shield to posterolateral propodeal edge.
- PnW Pronotum width. Maximum width of pronotum in dorsal view.
- PtH Petiole height. Maximum height of petiole, measured in lateral view as a straight line from bottom edge of petiole, perpendicular to petiolar apex.
- PtL Petiole length. Measured in lateral view along dorsal outline of petiole from small anteroapical tooth to apex.
- PtW Petiole width. Maximum width of petiole in dorsal view.

All measurements are in millimetres. For measurements of petiole see SORGER & ZETTEL (2011: fig. 2). Terms for head structures and mandibular dentition follow BROWN (1976).

Photographs were taken with a Canon MP-E 65 mm f/2.8 1–5× Macro lens mounted on a Canon Eos 7D camera. Images were processed with Helicon Focus 8.2.3 stacking software and Adobe Photoshop 2023.



Fig. 1. Head, frontal view of *Odontomachus yamanei* sp.n., holotype.

Taxonomy

Odontomachus yamanei sp.n. (Figs 1–3)

Etymology. This species is dedicated to the eminent myrmecologist, Professor Seiki Yamane. The first author is grateful for the outstanding support that he received from him for his studies on Camponotini and other ants.

Type material. Holotype (worker, coll. Seiki Yamane, Japan), Solomon Islands, Guadalcanal Island, Honiara Reg., Barana village environment, 100–300 m a.s.l., XI.–XII. Paratypes (workers, coll. Herbert Zettel, Vienna): 2 workers, same locality data; 5 workers, Guadalcanal Island, Honiara Region, 10–15 km S Barana village, 50–200 m a.s.l., 21.XI.–17.XII.; 2 workers, Guadalcanal Island, Koso village, 15–18 km SSE Honiara, 500–650 m a.s.l., 1.–18.XII.; 1 worker, Guadalcanal Island (West part), Ciri environment, 400–600 m, 7.–13.XII.

Description of worker. Measurements: holotype: TL 16.2, HW 2.46, HL 3.75, CI 66, MdL 2.24, Mdl 60, SL 3.80, SI 154, MsL 5.25, PnW 1.46, PtH 1.61, PtL 1.72, PtW 0.55.

Paratypes (n = 10): TL ca. 15.3–16.5, HW 2.32–2.58, HL 3.53–3.88, CI 63–67, MdL 2.27–2.55, Mdl 60–66, SL 3.66–3.85, SI 149–158, MsL 4.97–5.55, PnW 1.36–1.54.

Structures. Large and slender species with long antennae and legs. Head (Fig. 1) long, comparatively slender, with distinct temporal prominences. Ocular ridge distinct.



Figs 2–3. *Odontomachus yamanei* sp.n., holotype. (2) Lateral view. (3) Dorsal view of mesosoma and petiole.

Median furrow deeply engraved. Longitudinal striation between frontal lobes fine, between posterior end of frontal lobes and ocular ridge forming a radiating, fan-like pattern. Head posterior of ocular ridge smooth and shiny, at most with a few dispersed (but rather large) punctures. Area between apophyseal lines narrow-lanceolate. Mandibles long, with long and sharp apical and subapical teeth, and a short intercalary tooth between them; on basal part ca. 7–9 denticles. Four maxillary and four labial palp segments. Entire mesosoma (Figs 2, 3) dorsally and pronotum posterolaterally with a rather uniform, fine, very dense, transverse striation; anterior part of pronotum and posterior part of propodeum with a barely coarser striation. Mesopleuron completely finely striate. Petiole (Fig. 2) anteriorly pedunculate, with very long apical spine; peduncle and base of spine dorsally with distinct transverse striation; ventral process longer than its basal width, its apex narrowly rounded and often with a few very short setae; petiolar spine long, weakly curved.



Figs4–7. Comparison of types of *Odontomachus saevissimus* and presently synonymized taxa, dorsal view of mesosoma and petiole. (4) Holotype of *O. saevissimus* (CASENT0900658) from Seram (from Antweb, photographer Ryan Perry). (5) Syntype of *O. saevissimus* var. *lineae* (CASENT0900615) from New Guinea (from Antweb, photographer Ryan Perry). (6) Syntype of *O. saevissimus* var. *tauerni* (FOCOL 1067) from Seram (from Antweb, photographer Christiana Klingenberg). (7) Holotype of *O. transversostriatus* (CASENT0900616) from Yapen (from Antweb, photographer Ryan Perry).

Pilosity. Head almost bald. Labrum and sides of clypeus with short pilosity. Mandible with the usual trigger hairs. Mesosoma appearing bald but with very disperse, appressed minute hairs. Petiole with some short posteriorly directed setae on ventral process. Gaster with several long setae at apex; sterna with a few dispersed short hairs.

Colour. Body reddish brown to medium brown. Gaster from about middle of first segment to apex infuscated, vaguely iridescent. Mandibles and scape dark brown to blackish. Legs yellowish brown, paler than body, but tarsi dark brown.

Distribution. Solomon Islands: Guadalcanal Island.

Comparative notes. *Odontomachus yamanei* sp.n. is a member of the *Odontomachus saevissimus* species group sensu BROWN (1976). The pedunculate shape of the petiole is characteristic for this group. The new species was previously confused with *O. saevissimus*, a species described from the Moluccas, Indonesia. We compared the new species with *O. saevissimus* specimens from Ambon Island deposited in the Natural History Museum Vienna, which agree with the holotype illustrated in ANTWEB (2023), but differ from the Guadalcanal specimens by the following characteristics: Median furrow of head narrower and sharper. Area between apophyseal lines slightly broader. Mesosoma with uneven, partly much coarser striation; anterior part of pronotum with a few very rough rugae (comp. Fig. 4); posterior part laterally with finer transverse rugae (but still coarser than in *O. yamanei* sp.n.); posterolateral part of pronotum with large shiny area; interstices between rugae and on mesonotum and propodeum larger, distinctly shiny; propodeum posteriorly with a few rough rugae (comp. Fig. 4). Dorsum of petiolar peduncle not striate (comp. Fig. 4); spine of petiole slightly stouter; ventral process without short setae.

While this isolated taxon from Guadalcanal Island has never been given a name before, some synonyms of *O. saevissimus* (see WILSON 1959, BROWN 1976), especially those from New Guinea and Yapen, deserve future attention and may be distinct species, as well. However, their sculpture more closely resembles the “true” *O. saevissimus* from the Moluccas than *O. yamanei* sp.n. (comp. Figs 3–7).

It has already been shown by SORGER & ZETTEL (2011) and follow-up studies on the *Odontomachus infandus* group (GENERAL 2018, ZETTEL & SORGER 2023) that details of sculpture provide more easily useable characters to distinguish closely related, geographically isolated morphospecies than morphometrics within this group. In times when national laws complicate – or in some cases even impede – access to fresh insect specimens from remote places on this earth, morphology still provides a useful tool to increase our understanding of global insect diversity.

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