

Odontomachus ferminae, a new Philippine species of the *infandus* species group (Hymenoptera: Formicidae)

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Abstract

Odontomachus ferminae sp. n., new species of the *infandus* species-group, is described based on the worker and alate female. A modification of the key to the *infandus* species-group is provided to include this new species.

Keywords: *Odontomachus*, *Formicidae*, *Mt. Guiting-guiting*, *new species*.

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Introduction

Ants of the genus *Odontomachus* Latreille, 1804 are spectacular members of the insect fauna of tropical forests. These large ants possess long narrow bodies and long legs. They forage on the forest floor with linear mandibles opened 180 degrees and perpendicular to the axis of the body.

The species diversity of *Odontomachus* ants in the Philippines is remarkably high, with 11 species out of 71 valid species (Bolton 2018). Sorger and Zettel (2011) recognized 11 species from the Philippines, including 3 species that they described[#]. They also included 2 morphospecies that they declined to name, bringing the number to 13 distinct forms. Only New Guinea, with 17 species, and Brazil, with 15 species, have more species than the Philippines (AntWiki 2018).

One of the uses of a generic revision, even of a single country, is the discovery of new species not treated in the revision. Specimens

[#]General and Alpert (2012) provided a slightly different list of 11 species that included *O. papuanus* Emery, 1887 and *O. saevissimus* F. Smith, 1858 which Sorger and Zettel (2011) had argued were cases of misidentification. It was not clear whether Sorger and Zettel examined the Philippine specimens at the Museum of Comparative Zoology, Harvard University that are referred to these species.

that do not key out well are quite likely to be new species or at least new distributional records of species known from elsewhere.

It is interesting that Sorger and Zettel (2011) sampled the *Odontomachus* ants from Sibuyan Island but were unable to find the subject of this paper.

Materials and Methods

Measurements (in millimetres), arranged sequentially from anterior to posterior, and acronyms follow Sorger and Zettel (2011) to facilitate comparison with the species treated therein.

- MdL Mandible length, maximum length of mandible from insertion to apex, measured in full face view.
- HL Head length, maximum length of head capsule, excluding mandibles, from anterior-most point of clypeal margin to posterior-most point of head capsule, measured in full face view.
- HW Maximum head width, including eyes when they exceed the lateral margin of the head, measured in full face view.
- SL Scape length, maximum length of scape, excluding basal neck and condyle, measured at the appropriate angle such

- that the scape is positioned perpendicular to the viewer.
- ML Mesosomal length measured from anterior edge of the pronotum (excluding the collar) to posterior edge of propodeal lobe.
- PnW Maximum width of pronotum, measured in dorsal view.
- PtH Petiole height, maximum height of petiole from bottom margin to petiole apex, measured in lateral view.
- PtL Petiole length, maximum length along the dorsal margin of petiole from anterior denticle to apex, measured in lateral view.
- PtW Petiole width, maximum width of petiole, measured in dorsal view.
- GL Gaster length, maximum length from base of first gastral tergite to apex of gaster, measured in lateral view.
- TL The total outstretched length of ant from mandibular apex to gastral apex; when measured in lateral view, the sum of mandibular length + head length + mesosomal length + length of petiole + length of gaster.

Indices

- CI Cephalic Index: PHW/HL x 100.
- MdI Mandible Index: MdL/HL x 100.
- SI Scape Index: SL/PHW x 100.

Collection Abbreviations (mostly from Brandão, 2000)

- ANIC Australian National Insect Collection, Canberra, Australia.
- BMNH Natural History Museum, London, UK.
- MCZC Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA.
- NMNH Philippine National Museum of Natural History, Manila, Philippines.
- UPLB University of the Philippine Los Baños, Museum of Natural History Entomological Collection, Los Baños, Laguna, Philippines.
- USNM United States National Museum of Natural History, Washington, D.C., USA.

Specimens were examined and measured with a Leica S8 stereomicroscope with ocular micrometer. Images of the wings, head, and antennae were created using a Leica MC120HD digital camera attached to the Leica S8 stereomicroscope. These images were stacked using Combine ZM. The stacked images were edited with Adobe Photoshop CS5. Images of the external genitalia were created with Leica DFC 450 digital camera attached to a Leica M205C stereomicroscope. These source images were stacked with Helicon Focus 5.3 64X. Stacked images were edited with Adobe Photoshop CS5 Extended.

Results

Taxonomy

Odontomachus Latreille, 1804

Type species: *Formica haematoda* Linnaeus, 1758, by monotypy.

Odontomachus ferminae General sp. n.

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Measurements and indices

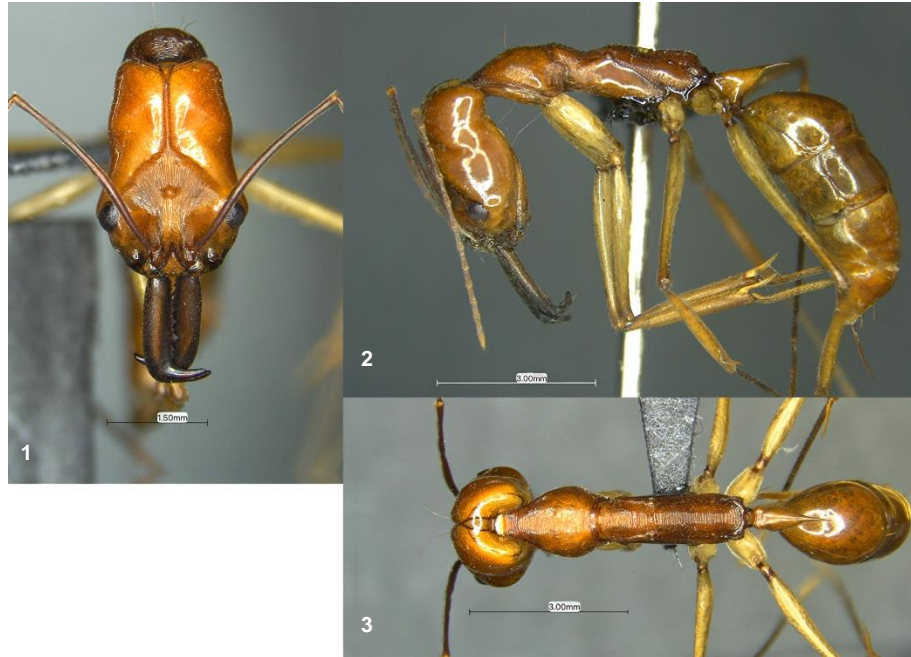
Worker measurements of holotype worker (paratype (n=16) mean: range in brackets): MdL 1.8 (1.8 [1.4-1.9]), HL 3.1 (3.2 [2.6-3.4]), HW 2.2 (2.2 [1.8-2.4]), SL 3.1 (3.1 [2.7-3.3]), ML 4.2 (4.4 [3.6-4.6]), PnW 1.3 (1.3 [1.0-1.4]), PtH 1.3 (1.3 [1.1-1.5]), PtL 1.3 (1.4 [1.2-1.5]), PtW 0.5 (0.5 [0.4-0.5]), GL 3.7 (3.8 [2.9-4.7]), TL 14.1 (14.5 [11.7-15.6]).

Indices: CI 71 (69 [67-72]), MdI 58 (56 [52-61]), SI 141 (141 [135-150]).

Diagnosis of worker (Figures 1-3), distinguishing characters in boldface:

Member of *infandus* species-group; in full-face view, **posterior dorsum of head entirely smooth**; median furrow deeply impressed; frons with striations radiating fan-like from frontal carinae to anterior edge of ocular ridge; apical and subapical mandibular teeth acute; in lateral view, **mesopleuron mostly smooth, with some striations at anterior third of pleurite**; petiolar spine long; first gastral tergite dorsally flattened, without a longitudinal impression; in dorsal view, **pronotum**

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Figures 1-3. *Odontomachus ferminae* sp. n. Paratype worker: 1) full-face view; 2) lateral view; 3) dorsal view.



Figures 4-6. *Odontomachus ferminae* sp. n. Female alate paratype: 4) full-face view; 5) lateral view; 6) dorsal view.

transversely striate; head and body concolorously light orange; legs yellow.

Description of worker (Figures 1-3):

In full-face view, head longer than broad, widest at level of eyes; posterior margin of head broadly emarginate; emargination delineated by nuchal carina; posterior dorsum of head entirely smooth; temporal ridge low but distinct; extraocular furrow present; ocular ridge prominent; median furrow deeply impressed, terminating at striations of frons; compound eyes dorsolaterally positioned, not breaking the lateral margin of head; mandibles relatively short (mean MdL = 1.76 mm; mean MdI = 56); apical and subapical mandibular teeth acute; intercalary tooth acute and prominent, shorter than apical tooth; one row of mesal teeth present; mesal teeth triangular, decreasing in size posteriorly; second mesal tooth largest.

In lateral view, mesosoma long and slender; pronotum weakly convex; promesonotal suture prominent; anterior mesonotum higher than pronotum; metanotal groove impressed; propodeal dorsum much longer than propodeal declivity; metanotal spiracle large, situated dorsolaterally; propodeal spiracle small and slit-like, situated laterally, just above the interruption of the transverse striations of the lateral face of the posterior mesosoma; metapleural gland bulla prominent; metapleural gland orifice oval, directed dorsally; petiole supplanted by a sharp spine; anterior face of petiole sloping upward from a basal transverse carina (= anterior collar of Brown, 1976); posterior face sinuate; ventral petiolar process keel-like; first gastral tergite dorsally flattened but without a linear medial impression; sting long and functional.

Sculpture: frons with striations radiating fan-like from frontal carinae to anterior edge of ocular ridge; in lateral view, mesopleuron mostly smooth, with some striation at anterior third of pleurite; metapleuron transversely striate; in dorsal view, mesosoma and propodeal declivity transversely striate; petiole and gaster smooth.

Pilosity: a pair of erect hairs at center of frons; a transverse row of four long, erect hairs at center of pronotum (one hair broken off in holotype); very short decumbent pilosity scattered on

mandible, median clypeus, antennal scape, and dorsum of head and mesosoma.

Colour: antenna, head and body concolorously brownish orange; mandibles brown; legs yellow.

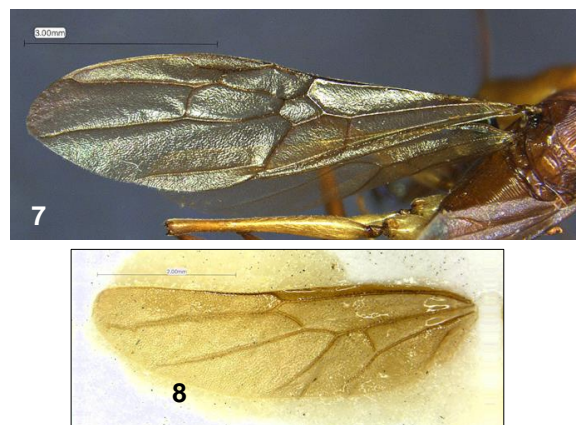
Description of alate female (Figures 4-8):

Head as in worker, but with the following differences: posterior margin of head more shallowly emarginate; 3 ocelli present at median apex of frons; each lateral ocellus behind erect hair at center of head; lateral ocelli separated by less than diameter of lateral ocellus.

In lateral view, full complement of flight sclerites present; wings present; dorsal outline of pronotum flat; promesonotal junction rigid but distinct; mesoscutum arched; mesoscutellum domed, higher than mesoscutum; metanotum a narrow transverse plate; propodeum, petiole, and gaster similar to that of worker.

Sculpture: pronotum dorsally transversely striate, laterally with curved striations forming a horseshoe shape; mesoscutum longitudinally striate; dome of mesoscutellum smooth; propodeum transversely striate; petiole and gaster smooth.

Pilosity: a long, obliquely directed erect hair arising just anterior to each lateral ocellus; a transverse row of four erect, somewhat flexuous, hairs arising slightly behind midlength of pronotum; very short decumbent pilosity scattered on mandible, median clypeus, antennal scape, and dorsum of head and mesosoma.



Figures 7-8. *Odontomachus ferminae* sp. n. Female alate paratype: 7) Forewing; 8) Hindwing (note: jugal lobe obscured by accidental tear during imaging).

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Forewing: pterostigma large; seven closed cells present; free abscissae present, Mf4-6 and CuAf4-5; Rsx abscissa absent, as depicted in Figure 7.

Hindwing: jugal lobe present; venation as depicted in Figure 8.

Colour: same as the worker.

Material examined

Holotype worker: "PHILIPPINES: Romblon Province, Sibuyan Island, Municipality of Magdiwang, Mt. Guiting-guiting Natural Park, 04.VI.2016, leg. D.E.M. General, ex. trail series, UPLBMNH HYM-01646 (deposited in UPLB).

Paratypes: 2 workers, same data as holotype, UPLBMNH HYM-01647 through 01648 (deposited in UPLB, NMNH); 12 workers, 1 alate female, PHILIPPINES: Romblon Province, Sibuyan Island, Municipality of Magdiwang, Mt. Guiting-guiting Natural Park, 24-31.III.2017, leg. C.C. Lucañas, UPLBMNH HYM-01649 through 01661 (one worker each deposited in ANIC, BMNH, MCZC, NMNH, USNM, the rest of the workers and the alate female deposited in UPLB). Non-type material: 2 workers, same data as holotype but with badly damaged or detached gasters, UPLBMNH HYM-01662 through 01663.

Bionomics: This ant is locally abundant at lower elevations of Mt. Guiting-guiting, specifically the area around "Camp 1", at about 300 meters above mean sea level. They can be seen foraging along the trail to Camp 1 and in the leaf litter and open ground in the Camp. They are evidently tolerant to some degree of disturbance since the area is a semi-permanent trail and campsite.

Etymology: This species is lovingly dedicated to my late mother, Fermina M. General.

Comparative Notes

Possessing acute apical and subapical teeth, *Odontomachus ferminae* **sp. n.** clearly belongs to the *infandus* species group. However, it is easily distinguished from the known species of the group by its smooth posterior dorsum of head, mesopleuron that is mostly smooth, transversely striate dorsum of the pronotum, first gastral tergite flattened but

without a longitudinal impression, and its unique coloration of light orange head and body and yellow legs.

Discussion

Odontomachus ferminae **sp. n.** is similar in size and colour to local populations of *Oecophylla smaragdina* L. It is possible that there is a Müllerian mimicry system between these two species. This possible relationship should be investigated further.

Using the key of Brown (1976), *O. ferminae* **sp. n.** keys out to the couplet that separates *O. banksi* Forel, 1910 and *O. infandus* F. Smith, 1858, both members of the *infandus* species group.

In the key of Sorger and Zettel (2011), this species, with its smooth posterior dorsum of head, fails to satisfy either lug of Couplet 4. Couplet 4 separates species with punctured posterior dorsum of head from those with striate posterior dorsum of head. Thus, it is a simple matter for separating *O. ferminae* **sp. n.** from the rest of the *infandus* group. The following couplet may be inserted before Couplet 4 of the Sorger and Zettel (2011) key:

Posterior dorsum of head smooth and shiny.....*Odontomachus ferminae* **sp. n.**
Posterior dorsum of head sculptured, either punctured or striate.....5

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