

# ***Romblonella longinoi* (Hymenoptera: Formicidae), a new species and first record of the genus from Sabah, Malaysia, with a key to the species of *Romblonella* Wheeler, 1935**

**David Emmanuel M. General**

*\*University Researcher, University of the Philippines Los Baños Museum of Natural History, College, Los Baños, Laguna 4031, Philippines, and Research Associate, National Museum of the Philippines, Taft Ave, Ermita, Metro Manila 1000, Philippines.*

E-mail: [davegeneral2011@gmail.com](mailto:davegeneral2011@gmail.com)

## **Abstract**

A new species of *Romblonella* Wheeler, 1935 from Sabah represents the first record of the genus for Malaysia. The worker and the associated male alate of *Romblonella longinoi* sp. n. are described. This new species is easily distinguished from all known species by its posteriorly broadened head capsule and coloration. An identification key to the workers of *Romblonella* is provided.

**Keywords:** *Romblonella*, *Formicidae*, Sabah, new species, identification key

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## **Introduction**

*Romblonella* Wheeler, 1935 is a small genus of myrmicine ants, with nine known species distributed from the Philippines to islands of the South Pacific, New Guinea, and Australia (Bolton, 2015; General and Buenavente 2015, Shattuck *et al.*, 2014; Taylor, 1991).

During the peer-review process of my previous paper describing *Romblonella coryae* General and Buenavente, 2015 from the island of Palawan, Philippines, I was asked about a nest series collection from Sabah. The Sabah material turned out to be a distinctive new species, which I now describe in this present contribution.

## **Materials and Methods**

Specimens were examined and measured with a Leica S8 stereomicroscope with ocular micrometer at PNM. Type specimens of other species were examined and measured with a Wild 5A stereomicroscope with ocular micrometer at MCZC. 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 at the MCZC Ant Room 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.

## Measurements (in millimetres)

- EL Maximum diameter of compound eye.
- EW Maximum width of compound eye.
- GL Maximum length of gaster, from base of first gastral tergite to apex of gaster, measured in lateral view.
- HL Maximum head length in full face view, measured from anterior-most point of clypeal margin to posterior-most point of head capsule.
- AHW Anterior head width, maximum width in front of the compound eyes, in full face view.

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PHW Posterior head width, maximum width behind the compound eyes, in full face view.  
ML Mesosomal length measured from anterior edge of the pronotum (excluding the collar) to posterior edge of propodeal lobe.  
PW Maximum width of pronotum in dorsal view.  
SL Length of scape, excluding basal neck and condyle.  
SPL Propodeal spine length, maximum distance from inner posterior margin of propodeal spiracle to propodeal spine apex.  
PetL Petiole length, straight line length, in lateral view, from anterior margin of petiolar denticle to posterior inflection.  
PetW Maximum width of petiole in dorsal view.  
PetH Petiolar height in lateral view, measured as the perpendicular distance from the ventral margin to the highest point of posterolateral tubercles.  
PPL Postpetiole length, straight line length, in lateral view, from anterior to posterior inflections.  
PPW Maximum width of postpetiole in dorsal view.  
PPH Measured from sternal process base to postpetiole apex in lateral view.  
TL The total outstretched length of ant from mandibular apex to gastral apex; when measured in profile the sum of mandibular length + head length + mesosomal length + lengths of waist segments + length of gaster.

**Indices**

CI Cephalic index: PHW/HL x 100.  
EI Eye Index: EL/PHW x 100.  
SI Scape index: SL/PHW x 100.

**Collection Abbreviations** (Brandão, 2000)

ANIC Australian National Insect Collection, Canberra, Australia.  
BMNH Natural History Museum, London, UK.  
CASC California Academy of Sciences, San Francisco, CA, USA.

DMGC Private Collection, David Emmanuel M. General.  
JTLC Private Collection, John T. Longino.  
MCZC Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA.  
PNM National Museum of the Philippines, Manila, Philippines  
USNM United States National Museum of Natural History, Washington, D.C., USA.

**Synonymic list of species**

*coryae* General, 2015 [holotype examined]  
*elysii* (Mann, 1919) [cototype examined]  
*heatwolei* Taylor, 1991 [not seen]  
*liogaster* (Santschi, 1928) [not seen]  
= *vitiensis* M.R. Smith, 1953 (synonymy by Sarnat and Economo 2012: 121) [not seen]  
*opaca* (F. Smith, 1861)  
= *grandinodis* Wheeler, 1935 (synonymy by Bolton 1976: 294) [syntype examined]  
*palauensis* M.R. Smith, 1953 [paratype examined]  
*scrobifera* (Emery, 1897) [not seen]  
*townesi* M.R. Smith, 1953 [paratype examined]  
*yapensis* M.R. Smith, 1953 [paratype examined]

**Taxonomy**

***Romblonella* Wheeler, 1935**

Type species: *Romblonella grandinodis* Wheeler, 1935 (junior synonym of *Myrmica opaca* F. Smith, 1861), by original designation.

***Romblonella longinoi* General sp. n.**

[urn:lsid:zoobank.org:act:78EC95E1-4BFE-49B9-BC70-AD3913770D4E](https://doi.org/10.21203/rs.3.rs-1000000/v1)

**Measurements and indices**

Worker measurements of holotype worker [paratype (n=17) mean: range in brackets]: TL 4.01 [3.97: 3.67-4.14], HL 0.90 [0.89: 0.79-0.97], AHW 0.63 [0.69: 0.61-0.77], PHW 0.85 [0.84: 0.77-0.90], SL 0.54 [0.50: 0.36-0.58], EL 0.13 [0.18: 0.12-0.22], EW 0.13 [0.13: 0.11-0.14], PW 0.67 [0.63: 0.58-0.67], ML 1.13 [1.07: 1.01-1.13], SPL 0.43 [0.38:

0.32-0.43], PetL 0.47 [0.42: 0.38-0.47], PetW 0.36 [0.35: 0.31-0.49], PetH 0.47 [0.43: 0.38-0.49], PPL 0.31 [0.30: 0.27-0.34], PPW 0.45 [0.45: 0.41-0.47], PPH 0.41 [0.39: 0.36-0.41], GL 1.08 [1.17: 1.03-1.42].

Indices: CI 82 [86: 80-98], EI 16 [22: 13-25], SI 73 [65: 47-77].

#### **Description of worker (Figures 1-4):**

In full face view, posterior margin of head shallowly emarginate; head longer than wide; sides of head diverging posteriorly; eyes laterally located, slightly behind midlength of head; shallow scrobe present; frontal carina long, almost reaching the posterior margin of head; scapes short, exceeding posterior edge of eye by about 2X width of distal scape; antennal formula 12:3; mandibles triangular, with 6 robust teeth; palp formula 5:3; median clypeus carinate, with a median carina flanked by 3 pairs of lateral carinae; median clypeus inserted between frontal lobes and about as wide as frontal lobe; anterior clypeal margin entire, without an isolated median seta; head rugoreticulate with short cross-hatches that reach the adjacent rugae; punctae in interstitial spaces; mandibles striate.

In lateral view, dorsal margin of mesosoma evenly convex and arched, without grooves or sutures; propodeal spines long and stout; petiole sessile, with anterodorsally directed angle over petiolar spiracle; petiole massive, larger and taller than postpetiole; anterior subpetiolar denticle present; spurs absent on meso- and metatibia.

In dorsal view, pronotum with angulate humeri; sides of promesonotum converging posteriorly; sides of propodeum subparallel but bulging slightly anterior to propodeal spiracle; stout propodeal spines slightly divergent through their entire length; mesosoma, petiole and postpetiole dorsally reticulate with interstitial punctulae; first gastral segment(= 4<sup>th</sup> abdominal) punctulate.

Head with evenly distributed short, blunt erect hairs that are shorter than distance between them; scape with suberect hairs; short, blunt

erect hairs sparsely distributed over rest of body. Body distinctly bi-colored; body yellow to orange except for brown antennal club, legs, distal and lateral edges of first gastral segment, and gastral segments 2-5.

Mean measurements (range in brackets) and indices of male paratype (n=2): TL 4.0 [3.96-4.03], HL 0.72 [0.68-0.76], AHW 0.40 [0.40-0.40], PHW 0.69 [0.68-0.70], SL 0.15 [0.14-0.16], EL 0.38 [0.37-0.40], EW 0.28 [0.28-0.29], PW 0.57 [0.56-0.58], ML 1.14 [1.13-1.15], GL 1.30 [1.30-1.30], CI 96 [93-100], EI 55 [53-58], SI 73 [70-76].

#### **Diagnosis of male paratype (Figures 5-15):**

Alate; approximately as long as worker, but more gracile.

In full-face view, head longer than broad; sides of head diverging posteriorly, posterior head width behind compound eyes about  $\frac{3}{4}$  wider than anterior head width; ocelli not unusually large (compared with images of male *R. palauensis*, M.R.Smith, 1953), width of ocelli subequal to distance between lateral ocellus and median ocellus; lateral ocelli separated by about 2X width of median ocellus; compound eye large, convex, occupying about  $\frac{2}{3}$  side of the head; posterior margin of head medially straight, laterally with lobes; antenna long, subfiliform, with 13 segments (Figures 6 and 7); length of antennomeres (one male measured) antennal scape, 0.08 mm; antennomere 2, 0.04 mm; antennomere 3, 0.27 mm; antennomere 4-7, range = 0.12-0.19 mm; antennomere 8, 0.23 mm; antennomere 9-13, range = 0.13-0.18 mm; antennomere 4-7 slightly and gently broadened distally, such that the basal end of succeeding segment is narrower than the distal end; antennomere 3-7 broader than antennomere 8-13; clypeus broadly projecting anteriorly, forming a rounded obtuse angle; mandible triangular, well-developed and functional; masticatory margin with 6 sharp triangular teeth; apical tooth longest, about 2X longer than preapical tooth; tooth 4 smallest; rest of teeth subequal; palp formula 5:3.

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Figures 1-4. *Romblonella longinoi* sp. n. (holotype): 1. lateral view; 2. full-face view; 3. dorsal view; 4. labels. Images kindly provided by Dr. John T. Longino.



Figures 5-8. *Romblonella longinoi* sp. n. (paratype male): 5. lateral view; 6. full-face view; 7. head and antennae; 8. dorsal view. Images 5, 6, and 8 kindly provided by Dr. John T. Longino and image 7 kindly provided by Perry Buenavente.



Figures 9-15. *Romblonella longinoi* sp. n. (paratype male): 9. forewing; 10. hindwing; 11. dorsal view of external genitalia; 12. lateral view of external genitalia; 13. ventral view of external genitalia; 14. apical view of external genitalia; 15. labels. Images of wings kindly provided by Perry Buenavente.

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In lateral view, lower portion of compound eye not obscuring gena and ventral margin of head; pronotum with a flat dorsal outline; mesonotum forming a low dome that slopes gently posteriorly to the propodeal dorsum; mesepimeron not bearing epimeral lobe; vertical impression on anterior third of metakatepisternum; propodeal spiracle circular; propodeal declivity almost vertical, forming a rounded obtuse angle with the propodeal dorsum; petiole tube-like, more than 2X longer than tall, with an indistinct, truncated node; postpetiole about half as long as petiole, with a low, rounded node; first gastral segment (AIV) longest, about half the length of gaster; tibial spurs absent on middle and hind legs; external genitalia as in Figures 11 to 14.

In dorsal view, notauli and parapsidal furrows present; notauli abbreviated, not meeting posteriorly; petiole longer than wide; postpetiole wider than petiole; gaster elongate-ovate.

Forewing (Figure 9) with pterostigma; cross-veins 1r-rs and 2r-rs present; free abscissa 2rs-m originating at distal 2/3 of Rs (radial sector) vein. Four closed cells present: C, R, 2R1, and 3R1. Hindwing as in Figure 10.

Clypeus carinate, with about 6 short, sinuate longitudinal carinae; head longitudinally rugulose, with short cross-hatches that do not reach the adjacent rugula, and with a ground surface of fine reticulation; mandibles longitudinally carinate; dorsal mesosoma rugulo-reticulate; propodeum transversely rugose; petiole dorsally and laterally rugo-reticulate; postpetiole dorsally and laterally rugulo-reticulate; gaster finely reticulate dorsally.

Pale yellow erect and sub-erect hairs evenly but sparsely distributed all over body; legs with decumbent hairs; antennae with yellowish, short, fine hairs.

Body and distal 5 antennal segments brown; mandibles, basal 8 antennal segments and tarsi yellowish-brown.

Gyne unknown.

### Material examined

Holotype worker, "MALAYSIA: Sabah, Mamutik Island, 10 m asl, 5.96657°N, 116.01336°E ±200m, 29.VIII.2010, leg. J. Longino, JTL7211, ex dead stem,

CASENT0617007" (deposited in CASC). Paratypes (17 workers, 2 male alates) same data as holotype (deposited in ANIC, BMNH, CASC, DMGC, JTLC, MCZC, USNM).

**Bionomics:** This species, represented by a nest series, was collected from a dead stem in wet tropical forest.

**Etymology:** This species is dedicated to my friend and colleague, Dr. John T. Longino, who collected this rare nest series with 2 associated males.

### Comparative Notes

The worker of *R. longinoi* **sp. n.** is distinguishable from the workers of all known species of the genus in its head capsule that is posteriorly broadened. All other species possess a head capsule that is roughly parallel-sided. Other morphological differences are summarized in the key. In addition, *R. longinoi* **sp. n.** workers are colored differently from any other *Romblonella* species.

The male *R. longinoi* **sp. n.** is distinguished from *R. palauensis* M.R. Smith, 1953 by the following characters: sides of head diverging posteriorly, ocelli not unusually large, lateral ocelli separated by about 2X width of median ocellus; compound eye large, convex, occupying about 2/3 side of the head, lower portion of compound eye not obscuring gena and ventral margin of head, free abscissa 2rs-m originating at distal 2/3 of Rs (radial sector) vein, and propodeum transversely rugose (Smith, 1953).

### Discussion

Despite the wide distribution of *Romblonella* species across the south and west Pacific, these ants are not easy to find. In a recent survey of the Fiji ants, Sarnat and Economo (2012) were unable to find *R. liogaster* Santschi, 1928 in its type locality.

*Romblonella* ants are ground foragers, typically collected in leaf litter samples (AntWeb, 2016) although *R. coryae* may be arboreal (General and Buenavente, 2015). Nest series are rarely collected and this present contribution describes one of only three known

nest series of *Romblonella* ants (AntWeb, 2016; Taylor, 1991).

This present contribution provides only the second description of the male caste of *Romblonella* 63 years after M.R. Smith described *R. palauensis*. Taylor (1991) simply mentioned the existence of the male of *R. heatwolei* Taylor, 1991 but did not provide a description or an illustration.

The genus *Romblonella* now includes 10 valid species. This number may increase with more intensive sampling of other localities in the Philippines, Borneo, New Guinea, and perhaps, New Caledonia.

#### Key to the species of *Romblonella*, based on the worker caste

- 1 In profile, petiole longer than tall, relatively flat dorsally, without a round dorsal outline .....***R. palauensis* Smith, 1953** (Palau Islands)
  - In profile, petiole taller than long, with a round dorsal outline.....2
- 2 In full-face view, dorsum of head longitudinally carinate.....3
  - In full-face view, dorsum of head reticulate.....6
- 3 Dorsum of head with interrupted longitudinal carinae.....***R. heatwolei* Taylor, 1991**(Australia)
  - Dorsum of head with longitudinal carinae that extend from posterior margin of clypeus to posterior margin of head.....4
- 4 Mesosoma, petiole and postpetiole dorsally longitudinally carinate .....***R. yapensis* Smith, 1953** (Micronesia: Caroline Islands)
  - Mesosoma, petiole and postpetiole dorsally reticulate.....5
- 5 In full-face view, sides of head diverging posteriorly; frontal carinae longer, almost reaching posterior margin of head; posteromedian clypeus as wide as frontal lobe.....***R. longinoi* sp. n.** (Mamutik I., Borneo)
  - In full-face view, sides of head subparallel; frontal carinae shorter, more than one eyelength from posterior margin of head; posteromedian clypeus wider than frontal lobe.....***R. townesi* Smith, 1953** (Marianas Islands)

- 6 Dorsum of first gastral tergite longitudinally costulate with interstitial punctulae; in full-face view, head subrectangular (CI 84-89); median clypeus narrow, only as wide as frontal lobe.....***R. coryae* General, 2015** (Palawan I., Philippines)
  - Dorsum of first gastral tergite smooth, punctulate or reticulate but never longitudinally costulate; in full-face view, head subquadrate (CI >94); median clypeus wider than frontal lobe.....7
- 7 Dorsum of first gastral tergite smooth .....***R. liogaster* (Santschi, 1928)** (Fiji I.)
  - Dorsum of first gastral tergite finely punctulate or reticulate, but never smooth.....8
- 8 Dorsum of mesosoma longitudinally carinate, with scattered cross-hatches; median clypeus without well-developed median carina.....***R. scrobifera* (Emery, 1897)** (New Guinea)
  - Dorsum of mesosoma reticulate; median clypeus with well-developed median carina.....9
- 9 In dorsal view, propodeal spines divergent throughout their entire length; body concolorous yellow.....***R. elysii* (Mann, 1919)** (Solomon Islands)
  - In dorsal view, propodeal spines basally divergent but distal half parallel or curved slightly inward; body dark-brown with lighter appendages.....***R. opaca* (F. Smith, 1861)** (Indonesia, Philippines)

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