

## *Polyrhachis (Myrmhopla) maryatiae*, a new species of the *armata*-group from Borneo (Hymenoptera: Formicidae, Formicinae)

RUDOLF J. KOHOUT

Biodiversity Program, Queensland Museum, PO Box 3300, South Brisbane,  
Queensland, 4101, Australia

E-mail: rudolf.kohout@qm.qld.gov.au

**Abstract.** *Polyrhachis (Myrmhopla) maryatiae*, a new species of the *armata*-group from Borneo, is described and illustrated. Characters are provided to distinguish it from the closely allied *P. armata* (Le Guillou 1842), a widespread Southeast Asian species. *Polyrhachis maryatiae* is rare in collections and probably nests high in the canopy of rainforest trees.

**Keywords:** Formicidae, *Polyrhachis (Myrmhopla)*, *armata*-group, Borneo, taxonomy, new species

### INTRODUCTION

*Polyrhachis armata* (Le Guillou, 1842) is a very widespread and distinctive south-east Asian species of the subgenus *Myrmhopla* Forel of the genus *Polyrhachis* Fr. Smith. My recent work on the taxonomy of the *Polyrhachis* ants of Borneo revealed a new species of *Myrmhopla* very similar in appearance to *P. armata* that is also known from the island. This species is described below and placed in the *armata* species-group of the subgenus (see Dorow 1995).

### METHODS

Photographs of specimens were taken with an Olympus SZX12 stereomicroscope and Olympus DP70 digital camera. Images were then processed using Helicon Focus (Mac OSX version) and Adobe Photoshop CS2 (Adobe Systems Inc., USA) software. Photographs of the new species are of the holotype. *P. armata* is represented by the images of specimens compared with the syntypes of *P. pandarus* Fr. Smith, 1857 and *P. defensa* Fr. Smith, 1857 (see discussion for explanation). Standard measurements and indices: TL = Total Length (the necessarily composite

measurement of the outstretched length of the entire ant measured in profile); HL = Head Length (the maximum measurable length of the head in perfect full face view, measured from the anterior-most point of the clypeal border or teeth, to the posterior-most point of the occipital margin); HW = Head Width (width of the head in perfect full face view, measured immediately in front of the eyes); CI = Cephalic Index (HW x 100/HL); SL = Scape Length (excluding the condyle); SI = Scape Index (SL x 100/HW); PW = Pronotal Width (greatest measurable width of the pronotal dorsum, excluding the spines); MTL = Metathoracic Tibial Length (maximum measurable length of the tibia of the hind leg). Measurements were taken using a Zeiss SR stereomicroscope with an eyepiece graticule calibrated against a stage micrometer. All measurements are expressed in millimetres (mm).

Abbreviations used for specimen data are: BM = The Natural History Museum, London; c. = about (Latin *circa*); Mt = Mount; RJK = R.J. Kohout; w = worker/s;

Abbreviations of institutions (with names of cooperating curators): ANIC = Australian National Insect Collection, CSIRO Division of Entomology, Canberra, ACT, Australia (Drs S.O. Shattuck, R.W.

Taylor); BMNH = The Natural History Museum, London, UK (B. Bolton, Dr G. Else); CASC = California Academy of Sciences, San Francisco, California, USA (Dr B.L. Fisher); ITBC = Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia (Prof. Datin Dr Maryati Mohamed); MCZC = Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA (Dr S.P. Cover); MNHA = Museum of Nature and Human Activities, Hyogo Pref. University, Hyogo, Japan (Assoc. Prof. Dr Yoshiaki Hashimoto); NMNH = National Museum of Natural History, Smithsonian Institution, Washington, DC, USA (Dr T.R. Schultz); OXUM = Hope Entomological Collections, University Museum, Oxford, UK (Dr C. O'Toole); QMBA = Queensland Museum, Brisbane, Queensland, Australia (Drs C.J. Burwell, G.B. Monteith).

## SYSTEMATICS

### *Polyrhachis maryatiaae* sp. nov.

(Figs 1, 2)

#### MATERIAL EXAMINED

HOLOTYPE: EAST MALAYSIA, SABAH, Maliau Basin, Ginseng Camp, 04°44'N, 116°55'E, c.700 m, 27.ii - 11.iii.2005, primary rainforest, R.J. Kohout & Effazilla Waty (RJK acc. # 05.17) (worker). PARATYPES: data as for holotype (23 workers, 1 alate queen). Type deposition: Holotype and 2 paratype workers in ITBC, most paratype workers and paratype queen in QMBA; 2 paratype workers each in ANIC, BMNH, CASC, MCZC and NMNH.

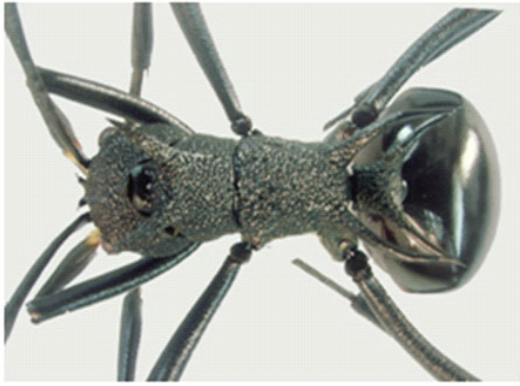
#### ADDITIONAL MATERIAL EXAMINED

EAST MALAYSIA: SABAH, Crocker Range, Mahua Waterfalls Trail, 05°47'N, 116°24'E, 950-1000 m, primary rainforest, 4.xi.2000 (J.R. Fellowes) (w); ditto, 5.xi.2000 (H. Ôkido) (w). SARAWAK, Mt Dulit, River Koyan, 2500ft, primary rainforest, 18 & 21.xi.1932 (B.M. Hobby & A.W. Moore, Oxford Expedition) (BM 1933-254) (w); Mt Dulit foot, Tinjar & Lejok River junction, 19.ix.1932 (B.M. Hobby & A.W. Moore, Oxford Expedition) (BM 1933-254) (w).

#### WORKER

Dimensions (holotype cited first): TL c.11.39, 10.68-11.94; HL 2.99, 2.78-3.03; HW 2.37, 2.12-2.46; CI 79, 76-81; SL 3.88, 3.63-3.98; SI 164, 162-171; PW 1.87, 1.72-2.06; MTL 5.24, 4.79-5.29 (12 measured).

Mandibles with 5 teeth. Anterior clypeal margin produced into two, blunt, anterolaterally projecting tooth-like prominences, their inner margins continuous medially, forming a 'U' shaped median emargination. Clypeus in profile straight along poorly defined median carina; posteriorly rounding into well impressed basal margin. Frontal triangle distinct. Frontal carinae sinuate, relatively short with highly raised laminate lobes; central area rather narrow with short median furrow. Antennal scapes somewhat flattened at their bases. Sides of head in front of eyes strongly convex; behind eyes sides converge into a rather narrow, distinctly raised occipital margin. Eyes strongly convex but in full face view not reaching lateral cephalic outline. Mesosoma totally laterally immarginate. Pronotum with pair of strong, acute, anterolaterally directed spines, rising dorsally from their bases and curving weakly downwards at midlength. Promesonotal suture distinct. Mesonotum in profile evenly convex; metanotal groove lacking. Propodeum armed with two acute, long spines, arising dorsolaterally and posteriorly, curving at midlength and becoming more posteriorly and horizontally directed. Propodeal dorsum descending into steep declivity in medially uninterrupted line. Petiole with anterior and posterior faces converging towards narrowly rounded dorsum, armed with a pair of acute, dorsolaterally directed spines that form an open 'U' shape in dorsal view. Anterior face of first gastral segment widely rounding onto dorsum of gaster.



1



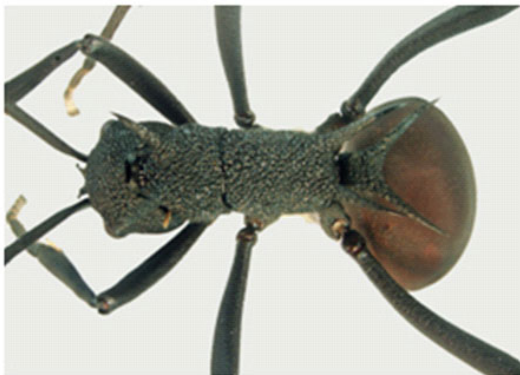
2



3



4



5



6

**Fig. 1-6.** Dorsal and lateral view; **1, 2** – *Polyrhachis maryatiaae* sp. nov. (holotype); **3, 4** – *Polyrhachis armata armata* (Le Guillou) (specimens compared with the syntypes of *P. pandarus* Fr. Smith); **5, 6** – *Polyrhachis armata defensa* Fr. Smith (specimens compared with the syntypes).

Mandibles very finely, mostly longitudinally rugose. Clypeus and frontal triangle weakly reticulate-rugose with numerous small punctures breaking reticulate pattern; intensity of sculpturation markedly increasing posteriorly with rest of head, mesosoma and petiole very deeply and coarsely foveolate-rugose; numerous additional small punctures distributed in irregular patches over most body surfaces, except gaster which is smooth and highly polished.

Mandibular masticatory borders and outer margins with numerous short to medium-length, reddish-golden hairs, curving closely to surface of mandibles. Median emargination of anterior clypeal margin with a few longer, anteriorly directed setae and shorter setae fringing margin laterally. A few very short hairs fringing apex of antennal scapes. Anterior face of fore coxae and ventral faces of middle and hind coxae with very few medium-length, downward-directed hairs. Gaster with only a few erect hairs lining apical segments dorsally; distinctly longer, more abundant hairs lining segments on gastral venter. Extremely short, very diluted, appressed pubescence over most dorsal surfaces, noticeably thicker on gastral dorsum.

Black throughout, except reddish-yellow condylae and golden spurs on front legs.

#### QUEEN

Dimensions: TL c.14.26; HL 3.40; HW 2.68; CI 79; SL 4.18; SI 156; PW 3.07; MTL 5.59 (1 measured).

Queen similar to worker with usual differences indicating caste, including three ocelli, complete thoracic structure and wings. Body sculpturation, pilosity and colour essentially as in worker.

Males and immature stages unknown.

#### DISCUSSION

*Polyrhachis maryatiaae* is closely related to *P. armata*, a very widespread and somewhat variable south-east Asian species that also occurs in Borneo. *Polyrhachis armata* was originally described from the Philippines but the type material

has apparently been lost. Consequently I have compared the holotype of *P. maryatiaae* with the available syntypes of *P. pandarus* Fr. Smith and *P. defensa* Fr. Smith (BMNH and OXUM respectively). Both species were considered by Roger (1863), Dalla Torre (1893) and Wheeler (1919) to be junior synonyms of *P. armata*. However, *P. defensa* was later revived from synonymy by Emery (1925) and considered by him and subsequent authors, including Bolton (1995) and Dorow (1995), to be a subspecies of *P. armata*. This decision was presumably based on variation in the colour of the gaster which is black in the nominate subspecies (Figs 3, 4) and reddish-brown in *defensa* (Figs 5, 6). I strongly suspect that the subspecific status of *defensa* is unwarranted but am reluctant to formalise the synonymy before a more detailed examination of the variation of *P. armata* across its entire geographic range.

*Polyrhachis maryatiaae* and *P. armata* are very similar in general appearance as they share the distinctive coarse sculpturation of the head and mesosoma. However they differ in several significant characters. *Polyrhachis maryatiaae* is generally larger (HL 2.78-3.03 in *maryatiaae* versus HL 2.43 and 2.50 in syntypes of *defensa* and *pandarus*), has more prominent sculpturation and distinctly longer pronotal and propodeal spines. The anterior face of the petiole in profile is smoothly rounded dorsally, forming a continuous curve with the outline of the petiolar spines. In contrast, the petiole in *P. armata* has the anterior and posterior faces subparallel and a more-or-less flat dorsum with the anterior margin distinctly raised. Consequently, the profile of the petiole features a distinct raised prominence between the anterior face and the base of the propodeal spines. In addition, the gaster is rather smooth and polished in *P. maryatiaae*, while it is distinctly reticulate-punctate and opaque in *P. armata*.

*P. maryatiaae* is evidently a rather rare species known only from a few collections made at higher elevation rainforest localities. It appears that colonies of *P. maryatiaae* nest high in the rainforest canopy and the workers only occasionally descend to ground level. The type series specimens were collected foraging over the trunks and

crowns of freshly felled trees at the Ginseng Camp, Maliau Basin Conservation Area at an elevation of about 700 m. Cutting down the trees, to make a suitable clearing for the camp, brought at least one colony to the ground. After the collection of most of the specimens in the first two days, they frequency rapidly declined and within less than a week from the first encounter no more specimens were seen foraging over the area.

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## ASIAN MYRMECOLOGY

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