

A new myrmicine ant genus from Malaysia with uncertain affinities (Hymenoptera: Formicidae)

FERNANDO FERNÁNDEZ C.

*Profesor Asociado, Instituto de Ciencias Naturales, Universidad Nacional de Colombia, Apartado 7495,
Bogotá D.C., Colombia
ffernandezca@unal.edu.co*

Abstract

The new myrmicine genus *Tyrannomyrmex* is described based on a solitary worker from Negri Sembilam, Malaysia. The principal traits of the ant are mandibles with two teeth, inner modified setae on the ventral margin of mandibles, and mesosoma devoid of any groove or suture. This new genus somewhat resembles the *Adelomyrmex* genus-group (particularly *Baracidris* from Africa) especially because of the modified setae; the structure is different, however (cylindric in *Tyrannomyrmex*, spatulate in *Adelomyrmex* genus-group) and the similarity may be a convergence. The antennal and clypeal configuration, as well as tooth number, distance the genus from the adelomyrmecines. The genus is described from a single species, *T. rex* n. sp., from Malaysia. A discussion of the affinities with *Adelomyrmex* genus-group is presented.

Key words: Ants, Formicidae, Malaysia, *Tyrannomyrmex rex*

Introduction

Although there have been advances in the systematics and phylogeny of some ant groups, we are still far from a complete understanding of the taxonomy and phylogeny of the ants (Brown, 2000). This is especially true for the subfamily Myrmicinae, for which there are no modern proposals for the internal classification of its component species. With a few exceptions, we do not know the limits or relationships of most of the proposed supraspecific taxa, thus unfortunately the genus described here cannot be placed reliably in a tribe or genus group. Although the taxon appears to share some attributes with the *Adelomyrmex* genus-group (Fernández, 2003), it does not seem to belong in the group.

Methods and terminology

Measurements were made using a Nikon SMZ 2T stereomicroscope at 80X magnification, with ocular micrometre and a fiber ring lamp. All measurements are in mm.

HL Head length: Maximum length, in full face view; HW Head width: Maximum width in full face view; EL Eye length: longest measurable length of eye; SL Scape length (excluding basal condyle), in straight line distance; PrW Pronotal width: maximum width of pronotum in dorsal view; WL Weber's length (*sensu* Kugler, 1994); PL Petiole length; PPL Postpetiole length; PW Petiole width; PPW Postpetiole width; GL Gaster length, in lateral view; TL Total length; CI Cephalic index: $HW/HL \times 100$; SI Scape index: $SL/HW \times 100$.

Tyrannomyrmex new genus

(Figs. 1, 2)

Type species

Tyrannomyrmex rex n.sp.

Generic diagnosis

Myrmicine ants with the following combination of characters:

Worker

Mandibles with two teeth in the masticatory border, apical and smaller subapical.

Inner ventral margin of masticatory border of mandibles with modified thick, cylindrical and transparent setae.

Clypeus not modified as central plate and devoid of carinae.

Anterior clypeal margin with single median seta.

Palpal formula apparently 2,2.

Antennae 11-segmented with ill-defined 3-segmented club.

Compound eyes small, reduced to a few ommatidia.

Frontal carinae and antennal scrobes absent.

Mesosoma without grooves.

Propodeal spiracle round.

Propodeal lobes large.

Sting large and robust.

Queen and male

Unknown.

Geographical distribution

Known only from type species from peninsular Malaysia.

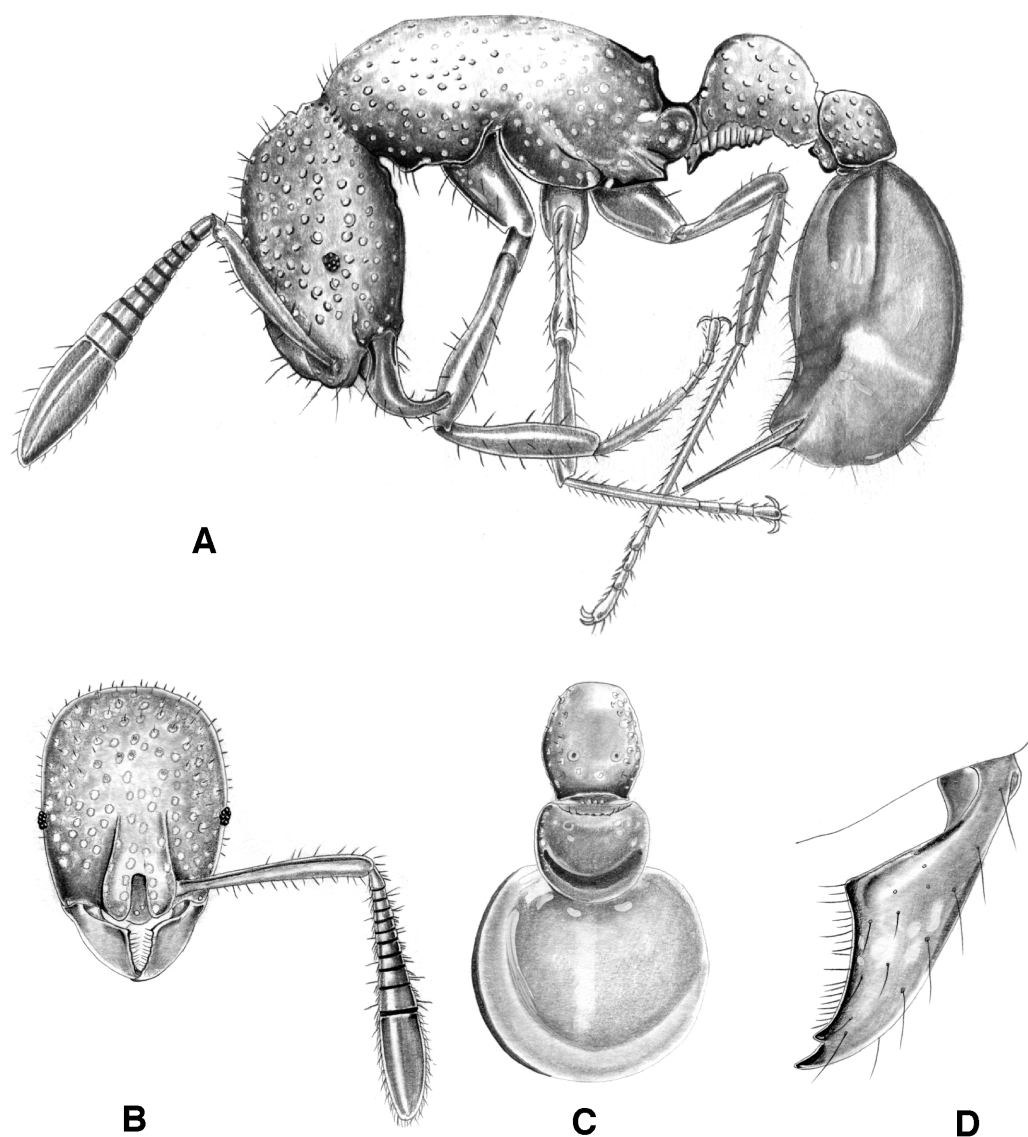


FIGURE 1: *Tyranomyrmex rex*, worker. A. Lateral view; B. Head in full face view; C. Petiole and postpetiole in dorsal view; D. Left mandible and clypeal portion showing partial setation.

***Tyranomyrmex rex* new species**

Worker measurements: HW 0.60 HL 0.80 EL 0.06 SL 0.64 PrW 0.49 WL 1.06 PL 0.43 PPL 0.29 PW 0.29 PPW 0.31 GL 0.92 TL 3.75 CI 75 SI 106.

Description of worker: Head in full face view longer than wide, with rounded postero-lateral corners, and slightly concave posterior margin; sides slightly convex, slightly narrowing anteriorly. Basal mandibular border separated from masticatory border by distinct

angle, masticatory border mostly edentate except for two apical teeth, ventral border of masticatory margin with row of thick, modified setae. Palp formula 2,2 *in situ* count. Anterior margin of clypeus convex, nearly angular medially; posteriorly clypeus projects narrowly between frontal lobes; median portion of clypeus raised and convex in lateral view, not modified as a flattened area and devoid of any carinae. Frontal lobes short and approximate. Antennae 11-segmented, with ill-defined 3-segmented club, the apical segment largest; scapes longer than head width, slightly incrassate subapically. Scape, when placed back, fails to reach the vertex margin by less than its maximum diameter. Eyes small, with a few ill-defined facets (about 6–7), situated slightly anterior to midlength of sides of head. Mesosoma forming a single broad and continuous convexity in lateral view, devoid of any grooves; propodeum armed with two small triangular teeth, propodeal spiracle round and at distance from propodeal margin equivalent to three diameters. Metapleural lobes broad, more or less rounded. Metapleural gland orifice not seen at 120X. Petiole large and prominent, campaniform in lateral view, in dorsal view the node longer than wide; postpetiole more or less as long as wide. Body shining and heavily foveolate, except for the smooth gaster. Most head foveae dense, about 70% of the eye size; those of mesosoma scattered and smaller in size. Body lacking pilosity, except for numerous small erect hairs arising from the cephalic foveae and anterior pronotal region; a few erect hairs on propleura and forecoxa; anterior margin of clypeus with long erect hairs, including a distinct medial seta. Dorsum of mandible, scape and flagellomeres with several erect hairs. Inner ventral margin of masticatory border of mandibles with modified thick, cylindric and transparent setae. Body light brown in color.



FIGURE 2: *T. rex*, holotype worker in lateral view.

Holotype worker: **Malaysia**, Negri Sembilan; Pasoh Forest Reserve, litter sample, xi.1994, M. Brendell, M. Jackson & S. Lewis legg No. 312. Deposited in the Natural History Museum (BMNH), London, UK.

Queens and males: Unknown.

Geographical distribution. Known only from type locality in Negri Sembilan, Malaysia.

Discussion: Reliable placement of most genera within Myrmicinae, including the genus described here, is difficult, given the precarious state of current understanding of the phylogeny and taxonomy of the subfamily. *Tyrannomyrmex* possesses a unique combination of traits which separate it from other myrmicines: modified setae along the internal border of the mandibles and mandibles with two teeth, apical and subapical, with the rest of the masticatory border lacking teeth. The modified setae are reminiscent of some of the *Adelomyrmex* (Fernández, 2003), but in *Tyrannomyrmex* the setae are thick, nonspatulate, and cylindrical. A detailed SEM examination is impossible at the moment due to lack of more specimens than the holotype.

The antennal club is not easily-defined. At first glance it appears to be 2-segmented, but the last segments under careful examination might also be interpreted as 3-segmented.

Including *Tyrannomyrmex* in *Adelomyrmex* genus-group would make it difficult to explain the traits the genus does not share with the tribe, such as the antennal configuration of 11 with ill defined club of 3 segments compared with 12 with club of 2 segments in *Adelomyrmex* genus-group and simple clypeal configuration, without elevated platforms, keels or carinae as in *Adelomyrmex* genus-group. The petiole is different in shape from the adelomyrmecines and the transverse, subpostpetiolar keel, which is unambiguously in an anterior position in the tribe, is relatively shorter and more medial in *Tyrannomyrmex*. Notoriously absent in this genus as well are dorsal mesosomal grooves, whilst in adelomyrmecines the metanotal groove is always present.

If *Tyrannomyrmex* were an adelomyrmecine genus, some of its structures could be interpreted as reductions (antennae from 12 to 11 segments, mandibular teeth from 4-7 to 2, disappearance of the metanotal groove, changed configuration of the petiole and ventral keel of the postpetiole. It would be necessary to accept a double modification of the structure of the clypeus from simple to modified to a keel or longitudinal platform (*Adelomyrmex* genus-group) and then back again to simple in form (*Tyrannomyrmex*).

The characteristics shared in both taxa, such as reduced palps and groove in the basalmost anterior part of the first tergum might be considered plesiomorphic characters within the *Adelomyrmex* genus-group, *Tyrannomyrmex*, and some neighboring groups, perhaps Solenopsidini and Pheidologetonini. *Tyrannomyrmex* could be interpreted as a basal taxon in the *Adelomyrmex* genus-group (or a sister group of the tribe), implying that the modified setae are homologous in both groups.

Given that *Tyrannomyrmex* has a medial clypeal seta, there is a possibility that it might be near to Solenopsidini. In effect, *Tyrannomyrmex* possesses the majority of this tribe's attributes according to Bolton's (1987) proposal, but the metapleural lobes are large and conspicuous in *Tyrannomyrmex*, while they are fairly reduced in Solenopsidini. Moreover, within Solenopsidini only *Phacota* has 11 segmented antenna with club of 2 segments con-

figuration, though it is important to keep in mind *Phacota* appears to be based on an anomalous specimen, perhaps an ergatoid reproductive (Bolton, 1987), and is probably another member of *Monomorium*.

Within the Myrmicinae bidentate mandibles are known only in *Afroxyidris*, an African species (Belshaw & Bolton, 1994), and *Oxyidris*, described from Dominican amber (Wilson, 1985). *Afroxyidris* appears to be near the group of genera associated with *Carebara* (Fernández, in preparation) in the tribe Pheidologetonini. The position of *Oxyidris* is more uncertain as even though Wilson (1985) places it near Solenopsidini, the genus lacks a median clypeal seta. I therefore do not consider *Tyrannomyrmex* to be near either of these genera; the possession of 2-toothed mandibles appears rather to be convergent in the three groups.

For all these reasons *Tyrannomyrmex* should be considered for the moment as a distinct but isolated genus of the subfamily, whose affinities might be with either the *Adelomyrmex* genus-group or with Solenopsidini. A detailed micrographic study might make possible a better interpretation of the structure of the modified setae of the internal part of the mandibles, the only character which might, potentially, place the genus within or near the *Adelomyrmex* genus-group.

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