

A new species of the ant genus *Pachycondyla* F. SMITH, 1858 from Ecuador (Hymenoptera: Formicidae)

William P. MACKAY & Emma E. MACKAY

Abstract

Pachycondyla schoedli sp.n. from Ecuador is described, based on workers. The worker is most similar to *P. carbonaria* (F. SMITH, 1858), but differs in that it lacks the strong, bluish and greenish reflections, and is less sculptured than *P. carbonaria*. The anepisternum lacks the obliquely horizontal striae that are present on the worker of *P. carbonaria*. It could be confused with *P. aenescens* MAYR, 1870, but can be separated, as the mesopleuron is mostly smooth and glossy, not sculptured and dull as in *P. aenescens*. It lacks the dense, golden pubescence that covers all surfaces of *P. eleonorae* (FOREL, 1921), and has a straight anterior petiolar face, which is convex in *P. eleonorae*. This new species is dedicated to the memory of Dr. Stefan Schödl, friend and fellow myrmecologist.

Key words: *Pachycondyla schoedli*, *P. carbonaria*, *P. aenescens*, *P. eleonorae*, Neotropics, Ecuador, South America, new species.

Prof. Dr. William P. Mackay (contact author) & Prof. Dr. Emma E. Mackay, Centennial Museum, Department of Biological Sciences, The University of Texas, El Paso, TX 79968, USA. E-mail: wmackay@utep.edu

Introduction

The New World ants of the genus *Pachycondyla* F. SMITH, 1858 are currently in a state of taxonomic confusion (W.P. Mackay & E.E. Mackay, unpubl., see <http://www.utep.edu/leb/antgenera.htm> for a key to the species, including this new species). The genus was described by SMITH (1858), which was followed by the descriptions of a number of related genera, most of which were tentatively considered to be synonyms by BROWN (1973). The species of *Pachycondyla* in Paraguay were recently reviewed by WILD (2002), members of the *P. apicalis* (LATREILLE, 1802) species complex by WILD (2005), and the species related to *P. villosa* (FABRICIUS, 1804) by LUCAS & al. (2002).

Most species of *Pachycondyla* are found in tropical forests, nesting in rotten wood or twigs (personal observations). They are predaceous ants, and the larger species inflict a painful sting (personal observations).

We have recently begun a review of these conspicuous and ecologically important ants, and have discovered this interesting new species. This new species belongs to a group of ants related to *P. aenescens* MAYR, 1870, which are usually found in montane tropical forests. Four of the five closely related species (*P. aenescens*, *P. carbonaria* (F. SMITH, 1858), *P. fauveli* EMERY, 1896, and *P. schoedli* sp.n.) occur in the same state of Ecuador, Pichincha, although not at the same specific localities, and the fifth (*P. eleonorae* (FOREL, 1921)) occurs in the nearby state of Tungurahua, Ecuador. The close proximity of the distributions of the five species suggests that they are all reproductively isolated.

Methods and Materials

Measurements were made using a Zeiss microscope with a micrometer, at 64 \times . Measurements made include:

Eye length: Greatest diameter of compound eye, including all ommatidia.

Head length: Measured from medial point of anterior margin of clypeus to medial posterior margin of head, as seen in full face view.

Head width: Widest measurement of head (excluding eyes).

Scape length: Straight line measured from proximal base (excluding neck and condyle) to distalmost edge.

Total length: Measured from anteriormost edge of head, with head in vertical position, to tip of gaster.

All of the specimens in the type series were originally deposited in the collection of the California Academy of Sciences.

Results and Discussion

This new species is a member of the *P. aenescens* species complex, the worker of which can be characterized in having the medial margin of the clypeus concave (in most species), and in lacking the preocular carina. The antennal scape is long, extending approximately $\frac{1}{2}$ length past the posterior lateral corner of the head, and has few or no erect hairs along the shaft. The mesosoma is depressed at the metanotal suture (seen in lateral view). The propodeal spiracle is elongated and slit-shaped. The stridulatory file is well developed on the second acrotergite.

***Pachycondyla schoedli* sp.n.** (Figs. 1 - 3)

Type material: Holotype worker: Ecuador, Pichincha, Bellavista Reserve, 2150 m, 12 km S Nanegalito (00° 00' 32" S, 78° 41' 08" W and 0° 0' 54" S, 78° 40' 56" W), 30.X. 1999, leg. R. Anderson (California Academy of Sciences). Paratypes: 10 workers, same data as holotype (Naturhistorisches Museum Wien, California Academy of Sciences, Collection of William and Emma Mackay, Instituto Humboldt de Colombia, Museum of Comparative Zoology, Museo de Zoologia da Universidade de São Paulo, Pontificia Universidad Católica del Ecuador).

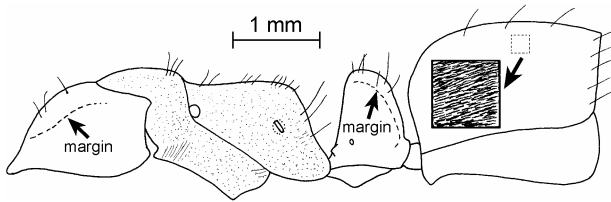


Fig. 1: Mesosoma, petiole and postpetiole of the holotype worker of *Pachycondyla schoedli* sp.n., lateral view.

Worker: Moderate sized (total length 10 mm), black, mostly shiny ant, with some weak bluish or greenish reflections; mandibles with approximately 10 teeth; anterior border of clypeus broadly convex, but concave medially; preocular carina absent, but with small, raised area located near posterior edge of clypeus; head 2.3 mm long, 2.2 mm wide; sides of head broadly convex, posterior margin concave; eyes relatively small (maximum diameter 0.5 mm), located about one maximum diameter from anterior margin of head; scape (length 2.5 mm) extends about two funicular segments past posterior lateral corner of head. Pronotal shoulder with slightly developed margin, metanotal suture depressed below level of remainder of mesosoma, breaks sculpture on dorsum; petiole moderately thickened when viewed in profile with poorly developed spiracular horns, straight anterior face, and broadly rounded posterior face, which meets anterior face near anterior edge; posterior lateral edges of petiole sharp; subpetiolar process poorly developed, consists of tiny, ventrally directed anterior angle and thick posterior process, which gradually diminishes in width. Anterior surface of postpetiole rounded between two faces, arolia weakly developed. Lobes of metasternal process triangular-shaped and widely spaced, similar to condition in *P. aenescens* and *P. fauveli*.

Erect hairs abundant on mandibles and clypeus (longest hair 0.6 mm in length), absent on shaft of scape, except at apex; few scattered hairs present on dorsal and ventral surfaces of head, but are generally absent on sides and posterior margin, dorsum of mesosoma has few, scattered, short (0.2 mm), erect hairs, as does petiole, and gaster. Coxae and femora have few erect hairs, tibiae without erect hairs, except at region near spur. Golden, appressed pubescence present on most surfaces, but not especially dense, does not hide sculpturing.

Most surfaces moderately to strongly shining, but with punctures, including head, dorsum of mesosoma, sides of mesosoma, petiole, and gaster. Moderate, bluish reflections present, especially on head and mesosoma.

Gyne and male: Unknown.

Comparison: The worker of this species is very similar to the worker of *P. carbonaria*. The two species can be separated, as *P. schoedli* lacks the extensive bluish reflections of *P. carbonaria*, and is less sculptured, specifically the upper half of the mesopleuron (anepisternum) mostly lacks the obliquely horizontal striae, which are present in *P. carbonaria*. *Pachycondyla schoedli* is also similar to *P. aenescens*, but can be easily separated as the mesopleuron is mostly smooth and glossy, not roughly sculptured and dull as in *P. aenescens*. The extensive, and golden, appressed pubescence could cause confusion with the worker of *P. eleonora*. It can be easily separated by the straight anterior face of the petiole, which is convex and somewhat angulate anteriorly in *P. eleonora*.

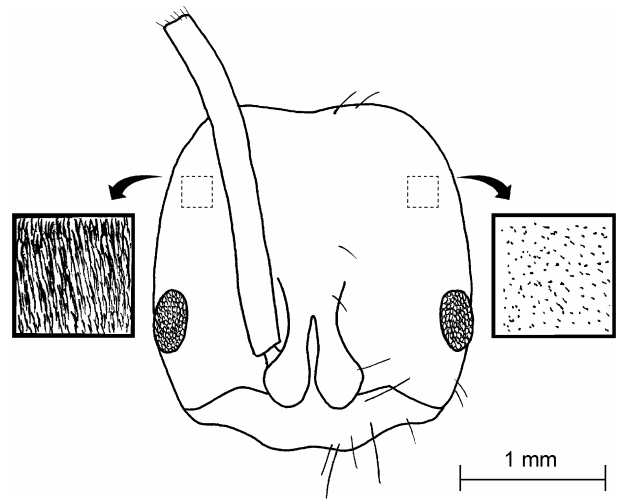


Fig. 2: Head of the holotype worker of *Pachycondyla schoedli* sp.n., frontal view. The appressed pubescence is shown on the right side (left side of figure), the sculpture on the left side of the head.

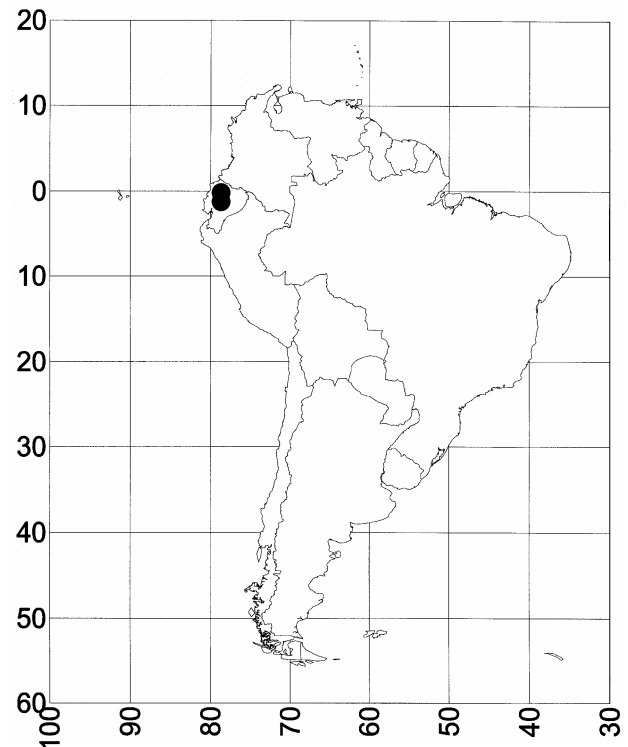


Fig. 3: Distribution of *Pachycondyla schoedli* sp.n.

Distribution: Ecuador: Pichincha (type locality); Cotopaxi, Otonga (0° 25' S, 79° 00' W), 19.XI.1994, leg. S. Salazar, and 24.VI.2004, leg. D. Donoso (Pontificia Universidad Católica del Ecuador).

Habitat: Montane forest at 1978 - 2150 m.

Biology: The type series was extracted from forest litter. Individual foragers from Cotopaxi were collected in June and November.

Etymology: Named in honor of the memory of Stefan Schödl of the Naturhistorisches Museum in Wien, Vienna, Austria, friend and myrmecologist, recognizing all of his assistance to our work.

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Zusammenfassung

Pachycondyla schoedli sp.n. wird aus Ecuador anhand von Arbeiterinnen beschrieben. Die Arbeiterinnen sind jenen von *P. carbonaria* (F. SMITH, 1858) am ähnlichsten, unterscheiden sich aber durch das Fehlen kräftiger, bläulicher und grünlicher Glanzflecken und sind schwächer skulptiert als *P. carbonaria*. Am Anepisternum fehlen die schrägen, horizontalen Riefen, die Arbeiterinnen von *P. carbonaria* haben. *Pachycondyla schoedli* sp.n. könnte mit *P. aenes-cens* MAYR, 1870 verwechselt werden, eine Unterscheidung ist aber möglich, denn das Mesopleuron ist großteils glatt und glänzend, nicht skulptiert und matt wie bei jener Art. *Pachycondyla schoedli* sp.n. fehlt die dichte, goldene Pubeszenzbehaarung, die die gesamte Körperoberfläche von

P. eleonorae (FOREL, 1921) bedeckt, außerdem ist die Frontalfläche des Petiolus gerade, nicht konvex wie bei *P. eleonorae*. Die neue Art wird dem Andenken an Dr. Stefan Schödl gewidmet, Freund und Gefährte in der Myrmekologie.

References

- BROWN, W.L. 1973: A comparison of the Hylean and Congo-West African rain forest ant faunas. In: MEGGERS, B.J., AYENSU, E.S. & DUCKWORTH, W.D. (Eds.). Tropical forest ecosystems in Africa and South America: A comparative review. – Smithsonian Institution Press, Washington D.C., pp. 161-185.
- LUCAS, C., FRESNEAU, D., KOLMER, K., HEINZE, J., DELABIE, J. & PHO, D. 2002: A multidisciplinary approach to discriminating different taxa in the species complex *Pachycondyla villosa* (Formicidae). – Biological Journal of the Linnean Society 75: 249-259.
- SMITH, F. 1858: Catalogue of hymenopterous insects in the collection of the British Muséum. Part VI. Formicidae. – British Muséum, London, 216 pp.
- WILD, A. 2002: The genus *Pachycondyla* (Hymenoptera: Formicidae) in Paraguay. – Boletín del Museo Nacional de Historia Natural de Paraguay 14: 1-18.
- WILD, A. 2005: Taxonomic revision of the *Pachycondyla apicalis* species complex (Hymenoptera: Formicidae). – Zootaxa 834: 1-25.