

The genus *Platythyrea* Roger, 1863 in Dominican Amber (Hymenoptera: Formicidae: Ponerinae)

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Abstract

LATTKE JE. 2003. The genus *Platythyrea* Roger, 1863 in Dominican Amber (Hymenoptera: Formicidae: Ponerinae). Entomotropica 18(2):107-111.

Three species of the genus *Platythyrea* are described from Dominican Amber: *P. dentata* sp. n., *P. procera* sp. n., and *P. scalprum* sp.n. The present data corroborates the decline in species numbers observed for other ant genera when comparing the fossil fauna with the extant fauna of Hispaniola.

Additional key words: Caribbean, extinction, fossil ants, taxonomy.

Resumen

LATTKE JE. 2003. El género *Platythyrea* Roger, 1863 en ámbar Dominicano (Hymenoptera: Formicidae: Ponerinae). Entomotropica 18(2):107-111.

Se describen tres especies del género *Platythyrea* de piezas de ámbar de la República Dominicana: *P. dentata* sp. n., *P. procera* sp. n., y *P. scalprum* sp. n. Los datos presentados corroboran la disminución observada en el número de especies para otros géneros de hormigas al comparar la fauna fosilizada con la fauna actual de La Española.

Palabras clave adicionales: Caribe, extinción, hormigas fósiles, taxonomía.

Introduction

The ant genus *Platythyrea* has a pantropical distribution and includes 37 known species, of which eight are found in the neotropics (Bolton 1995). The group was last revised by Brown (1975) and since then only a single species has been described from the American tropics (Kugler 1977). Their fossil record is limited to one species in Baltic Amber (Wheeler 1915), and although the genus has been cited as present in Dominican Amber (Baroni Urbani 1995; Wilson 1985, 1988), no fossil species have been described from this material. Three well-preserved and distinctive species from the Dominican Amber collection of the American Museum of Natural History (New York, U.S.A.) are described in this paper. The descriptions omit characters typical for the genus, which can be consulted either in Brown (1975) or in the generic diagnosis in Lattke (2003).

Materials and Methods

Measurements:

The distortions frequent in amber specimens, fractures of the matrix, differences in the refraction indices of air versus amber, and less than ideally positioned body parts make for rough measurements.

- HL Head length: maximum length of the cephalic capsule measured from the anterior margin of the clypeus to the midpoint of a line drawn across the posterior cephalic margin.
- HW Head width: maximum width of head, excluding the eyes.
- ML Mandible length: straight-line length of a mandible, measured from the base at the insertion into the head capsule, to the apex.
- SL Scape length: length of the first antennal segment, excluding the neck and basal condyle.
- ED Eye diameter: diameter of the compound eye, measured along its long axis.

WL Weber's length of the mesosoma (alitrunk): diagonal length, measured in lateral view, from the anterior margin of the pronotum (excluding the collar) to the posterior extremity of the metapleural lobe.

Indices: The following indices are derived from the preceding measurements:

CI Cephalic index: HW/HL
 MI Mandibular index: ML/HW
 SI Scape index: SL/HW
 OI Ocular index: ED/HW

Results

Platythyrea dentata sp. n.

(Figures 2, 5)

Holotype: A wingless queen embedded in a clear rounded piece of amber. Deposited in the American Museum of Natural History as specimen DR-14-461. Dominican Republic, Oligo-Miocene amber.

Diagnosis: Head in dorsal view with mostly straight posterior margin, with slight median concavity; mandibles dentate; metacoxal dorsum with triangular denticle.

Queen: Metrics. HL 1.09; HW 0.87; ML 0.48; SL 0.68; ED 0.27; WL 1.95 mm. CI 0.80; SI 0.78; MI 0.55; OI 0.31. Total length: 5.5 mm. Head widest just behind eyes in dorsal view; cephalic lateral margin broadly convex, posterior margin mostly straight with slight median concavity, anterior clypeal margin mostly straight, barely convex; eye convex, situated anteriorly. Frontal lobe slightly angular, anterior margin convex and shorter than posterior margin; scape flattened, surpassing posterior cephalic margin by more than one apical width, most funicular segments as wide as long. Frontal triangle shallow and brief, posterior clypeal border separated from lobes by v-shaped sulcus; longitudinal median sulcus stretches from clypeus to median ocellus. Mandible with translucent lamella bordering internal and masticatory margins, lamella widest along internal margin, distinctly separated from rest of mandible by sharp margin, masticatory border dentate, with at least eight denticles; mandibular sulcus shallow and brief.

Pronotal ventral margin rounded in lateral view; mesometapleural suture more distinctly impressed than mesopleural suture; propodeal dorsal margin convex in lateral view, declivitous margin concave with dorsolateral convex lobe, declivity with concave transverse section. Petiolar node not elongate, slightly

longer than wide, anterior margin slightly concave, dorsal margin evenly convex, lower anteriorly than posteriorly in lateral view. Dorsal petiolar surface separated from posterior face by sharp, almost perpendicular margin, posterior margin with brief dorsal lobe; subpetiolar process translucent, subquadrate with rounded anterior corner in lateral view. Anterior postpetiolar face concave, without ventral process. Profemur modestly swollen (W/L 0.33); metacoxa with triangular dorsal tooth; penultimate metatarsal segment without lateral lobes in dorsal view.

Worker, male: Unknown.

Etymology: The species name is derived from *dentatus*, the Latin term for "with teeth" and alludes to the dentate mandibles.

Comments: The only other New World species known to have dentate mandibles is the extant Central American *P. prizo* Kugler, 1977. This species was described from the worker caste and is larger (HL > 1.64; WL > 2.58 mm) than *P. dentata* with mostly flat eyes closer to the cephalic middle and a convex anterior clypeal margin in dorsal view. Additional information about *P. prizo*, including photographs of a queen, is given by Longino (1999). The queen of *P. prizo* in lateral view has a broadly concave propodeal declivity, without the overhang of *P. dentata*, and the metacoxal dorsum of *P. prizo*, both in the queen and worker, is illustrated as swollen, but definitely not dentate as in *P. dentata*.

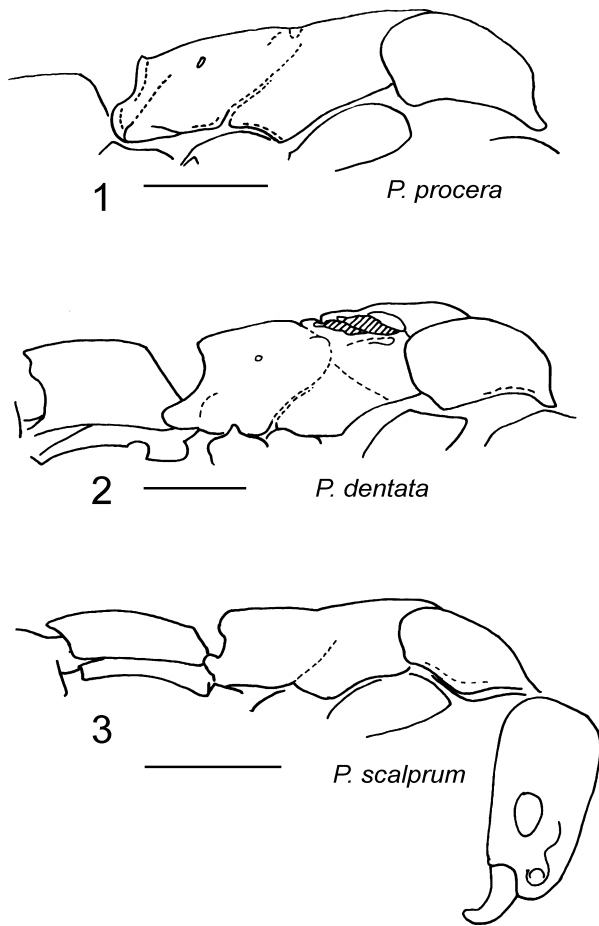
Platythyrea procera sp. n.

(Figure 1)

Holotype: One worker embedded in a clear oval piece of amber. Deposited in the American Museum of Natural History as specimen DR-14-458. Dominican Republic, Oligo-Miocene amber.

Diagnosis: Funicular segments longer than wide; propodeal declivity laterally bounded by lamella forming convex lobe ventrally and dorsally pointing denticle dorsally; legs mostly slender and elongate.

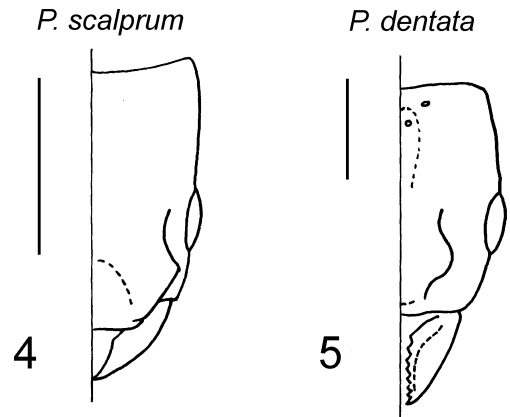
Worker: Metrics. HL 0.89; HW 0.68; ML 0.43; SL 0.64; ED 0.30; WL 1.70 mm. CI 0.76; SI 0.94; MI 0.63; OI 0.44. Total Length: 5.9 mm. Head elongate in dorsal view, posterior margin concave, anterior clypeal margin relatively straight, apparently without lamella; frontal lobe semi-triangular, anterior margin longer than posterior margin, frontal lobes broadly separated, frontal triangle not apparent; eye broadly convex, situated anteriorly on head. Scape apparently reaches posterior cephalic margin, funicular segments longer



FIGURES 1-3. Lateral view of *Platythyrea* specimens fossilized in Dominican Amber. Figure 1. Mesosoma of *P. procera* sp. n. Figure 2. Mesosoma and petiole of *P. dentata* sp. n. Figure 3. Head, mesosoma and petiole of *P. scalprum* sp. n. Scale bars equal 0.5 mm.

than wide; mandible edentate with faintly impressed, brief basal sulcus; maxillary palp with five segments.

In lateral view pronotal dorsal margin evenly convex, dorsal margin of mesometanotum straight; propodeal dorsal margin slightly convex and higher than anterior margin; mesometanotal suture well-impressed; propodeal spiracle round, opening directed posterolaterally. Propodeal dorsal surface meeting declivity through bluntly-angled margin; propodeal declivity concave in transverse section, laterally bounded by mostly narrow lamella, lamella expanded as convex lobe ventrally and as dorsally pointing triangular denticle dorsally in lateral view. Petiolar node elongate (W/L 0.58); posterior petiolar margin straight in dorsal view; subpetiolar process small, bluntly triangular in lateral view.



FIGURES 4-5. Dorsal view of half of the heads of *Platythyrea* specimens fossilized in Dominican Amber. Figure 4. *P. scalprum*. Figure 5. *P. dentata*. Scale bars equal 0.5 mm. Antenna omitted.

Legs generally slender and elongate except for slightly swollen profemur (W/L 0.33-0.41); protarsus without stout setae opposite strigil; metacoxal dorsum unarmed, penultimate metatarsal segment with well-developed lateral lobes in dorsal view.

Queen, male: Unknown.

Etymology: The species name alludes to its elongate appearance and is derived from the Latin word for slender, *procerus*.

Comments: This species is another small member of the genus, only slightly larger than *P. scalprum*. If one tries to identify this species using the key in Brown (1975:10) it leads to couplet six, where it becomes stranded. *P. procera* has a flattened clypeus as opposed to the swollen clypeus of *P. exigua* Kempf, 1964 and it lacks the petiolar and metacoxal denticle which is typical for *P. exigua*. The head of *P. procera* (CI 0.76) is slightly more elongate than in *P. zodion* Brown, 1975 (CI 0.90) and the other characters are comparable save for the more robust, subquadrate petiolar node of *P. zodion* (W/L 0.86) and the smaller eyes (OI 0.29) of *P. zodion*. The eyes in *P. zodion* are set more towards the median cephalic margins and it has six maxillary palp segments. The narrow lamella bordering the lateral margins of the propodeal declivity in *P. procera* is not found in the other two species and seems to be a character that readily distinguishes it from the rest of the American species.

***Platythyrea scalprum* sp. n.**

(Figures 3, 4)

Holotype: One worker embedded in a small piece of clouded amber with semi-parallel sides. Deposited in the American Museum of Natural History as specimen DR-14-354. Dominican Republic, Oligo-Miocene amber.

Diagnosis: Small size (HL < 0.9; WL < 1.2 mm); profemur swollen, almost half as wide as long; petiolar node very low in lateral view, with brief anterior face.

Worker: Metrics. HL 0.77; HW 0.64; ML 0.34; SL 0.43; ED 0.18; WL 1.18 mm. CI 0.84; SI 0.67; MI 0.53; OI 0.28. Total Length: 3.82 mm. Head slightly wider posteriorly than anteriorly, lateral margin mostly straight, slightly concave around eye; eye convex, situated close to mid-length, occupying not more than one-third lateral cephalic margin. Frontal lobe triangular, posterior margin shorter than anterior margin; scape not surpassing posterior cephalic margin; frontal triangle relatively broad. Mandible with fine sulcus stretching from near insertion laterally towards edentate masticatory border.

Pronotum evenly convex in lateral view, mesometanum relatively straight, propodeal dorsal and declivitous margins forming sharp angle, declivitous margin concave; propodeal dorsal surface separated by sharp, almost perpendicular angle from declivitous surface. Mesometapleural suture impressed, katepisternum rectangular; lateral propodeal surface separated from declivitous surface by sharp angle. Petiole elongate (W/L 0.67) in dorsal view with posterior margin discretely sinuous, a median convexity with concavities on each side; petiolar tergum very low, anterior margin much shorter than dorsal margin in lateral view, node higher anteriorly than posteriorly, dorsal margin forming acute angle with posterior margin; anteroventral process triangular. Protarsus with single stout seta opposite the strigil; profemur swollen, maximum width almost half of length (W/L 0.47); metacoxal dorsum unarmed.

Queen, male: Unknown.

Etymology: The species name is Latin for chisel and alludes to the chisel-like shape of the petiolar node in lateral view.

Comments: Compared with extant New World species it is the smallest, comparable in size to *P. exigua* or *P. zodion*. The node in *P. zodion* is not as elongate (W/L 0.86) as in *P. scalprum* and neither is the profemur as swollen (W/L 0.41) (Brown 1972). *P. exigua* is larger, with flat eyes set closer to the anterior margin, and a posterolateral denticle on the petiolar node, besides a

dorsal denticle on the metacoxa (Kempff 1964). The structure of the petiolar node is distinctive for *P. scalprum*, at least amongst the American species.

Discussion

The affinities of the fossil species with extant taxa can only be guessed at since phylogenetic studies have yet to be carried out for *Platythyrea*. The dentate mandibles of *P. prizo* and *P. dentata* are most likely a plesiomorphic state, with the edentate mandibles being the derived state. These three species outnumber the present *Platythyrea* species from Hispaniola. The only living species presently known from Hispaniola are *P. strenua* Wheeler & Mann, 1914 an island endemic, and *P. punctata* F. Smith, 1858, a widespread species found not only in the Caribbean but also in southern Florida and from Mexico to Central America (Brown 1975). Since fossilized remains for any one animal group are generally a limited sample of the total diversity for the group, it is assumed more species, in addition to these presently described, were present on the island during the time "sampled" by these fossils. This situation for *Platythyrea* corroborates the decline in species observed in other ant genera when comparing the numbers of species past and present in Hispaniola (De Andrade 1995).

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