



REVISTA BRASILEIRA DE
Entomologia
A Journal on Insect Diversity and Evolution

www.rbentomologia.com



Systematics, Morphology and Biogeography

***Nectarinella manauara*, new species and record of the genus from
Brazilian Amazonia (Hymenoptera, Vespidae, Polistinae)**



Orlando Tobias Silveira*, José Nazareno Araujo dos Santos-Junior

Museu Paraense Emílio Goeldi, Coordenação de Zoologia, Belém, PA, Brazil

ARTICLE INFO

Article history:

Received 30 March 2016

Accepted 9 May 2016

Available online 31 May 2016

Associate Editor: Marcel Hermes

Keywords:

Epiponini

Neotropical

Range extension

Reserva Ducke

Social wasp

ABSTRACT

Nectarinella manauara **sp. nov.** is described, representing the first record of the genus from Brazilian Amazonia. Its description raises richness for *Nectarinella* from two to three species, and extends the range of characteristics for the genus, especially in terms of body size and color patterns. Discovery of the new species may shed new light into the knowledge of phylogenetic relationships between *Nectarinella* and other closely related genera.

© 2016 Sociedade Brasileira de Entomologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Nectarinella Bequaert, 1938, is a small Neotropical genus of swarming polistine social wasps with only two previously described species. It was created as a subgenus of *Chartergus* Lepelletier, 1836, for a species from Panama described by Dover (1925) as *Nectarina championi*. More recently, the taxon was raised to the genus level by Richards (1978). Part of the past instability in genus level assignment of *Nectarina championi* was of a nomenclatural nature, related to problems involving the taxonomic “meaning” of names like *Chartergus* and *Parachartergus* von Ihering, 1904, rather than a question of properly acknowledging the phylogenetic affinities of the species (see Bequaert, 1938, 1944). *Nectarinella* is part of the *Pseudopolybia-Leipomeles* epiponine clade, more closely related to *Chartergellus* Bequaert, 1938 (Carpenter, 1991; Wenzel and Carpenter, 1994). The genus presents palpal formula 5–3 and nest architecture of the astelocytarous type (Richards, 1978). Characteristics of the male genitalia of *Nectarinella* (and other related genera) were studied by Carpenter and Mateus (2004). The Mesoamerican species was the sole known representative of the genus until the publication of the paper by Mateus and Noll (1997) describing *Nectarinella xavantinsensis* from Mato Grosso State in central Brazil. This widely disjunct distribution of the genus suggested that representatives could be found in regions in-between

in the South American continent. The new species here described, from central Brazilian Amazonia, fulfills that expectation, as well as extends the range of characteristics for the genus, especially in terms of body size and color patterns.

Material and methods

The new *Nectarinella* species was compared to specimens of both *Nectarinella championi* (Costa Rica, Rio Grande, 8/xii/1990, Carpenter & Wenzel; MPEG) and *Nectarinella xavantinsensis* (Brazil, Mato Grosso, Nova Xavantina, 06/xi/1997, Mateus & Noll; MPEG). Paratypes of the latter species (MZSP) were also examined. The specimens were studied using ZEISS SV-11 and LEICA MZ-16 dissecting stereomicroscopes; photographs were made using a LEICA DFC-420 digital camera coupled to those microscopes. The following ratios are used in description of proportions of some body parts: H/WCL (height and width of clypeus); POL:OOL (postocellar and ocello-ocular distances); L/WMS (length and width of mesoscutum).

Abbreviations for specimen repositories are as follows: Instituto Nacional de Pesquisas da Amazônia (INPA); Museu Paraense Emílio Goeldi (MPEG); Museu de Zoologia da Universidade de São Paulo (MZSP).

Results

Nectarinella manauara **sp. nov.**
(Figs. 1–4)

* Corresponding author.

E-mail: orlando@museu-goeldi.br (O.T. Silveira).



Figs. 1–4. *Nectarinella manauara* sp. nov. (1) Head, anterior view; (2) posterior view, red arrow points to vestigial occipital carina; (3) mesosoma, dorsal view, (4) lateral view; (5) head of *N. championi*, posterior view, red arrow points to vestigial occipital carina; (6) head of paratype of *N. xavantinensis*, anterior view; approximately same scale as (5).

Holotype: female, Brazil, Amazonas, Manaus, Reserva Ducke, 24.ix.1981, J. A. Rafael (INPA).

Description (Female). Very small, wing length 4.3 mm. Head (Figs. 1 and 2) wider than high; palpal formula 5–3; mandible outer surface largely flattened; clypeus wider than high, ratio H/WCL 0.75, lateral margin sinuate, performing above a continuous regular curve, and very narrowly separated from eye, apex narrow, weakly truncate, almost rounded, ventro-lateral indentation shallow, corresponding adjacent inner lobe weakly prominent; tentorial pit as close to antennal socket as to eye margin; interantennal area roundly and strongly bulging; ocelli forming an equilateral triangle, widely separated from eyes (POL:OOL a fraction less than 0.5); malar space wide (Fig. 1); occipital carina vestigial, developed as weak dorsal or dorso-lateral remnants (Fig. 2, red arrow); gena in lateral view narrowing above; pronotum (Figs. 3 and 4) very short, with lateral fovea located far below and close to ventral angle, fovea bordered in front by a short, low, but quite sharp margin; pronotal dorsal carina obtuse, not at all sharp, not strongly projecting forward, but otherwise quite well-developed and descending laterally to near the fovea (Figs. 3 and 4); pronotal anterior margin

with a narrow lamella and with short central retreating sector; mesoscutum (Fig. 3) nearly circular, wider than long, ratio L/WMS 0.8, with distinct margin laterally opposite tegula; mesopleuron without mesepisternal sulcus (Fig. 4); scutellum as a swollen transversal block with posterior surface vertical; metanotum completely vertical, barely visible from above, posterior margin with a shallow, curved contour; propodeum vertical, central area flat without forming noticeable cavity, but with lateral extremities slightly swollen; propodeal valve rather wide (not at all linear), with rounded subtriangular shape; hind wing with 1cu1 much shorter than cu-a.

Sculpture. Integument of head and mesosoma generally smooth and shining, with variably scattered medium-sized punctures; metasoma duller with fine, regular, dense punctuation; clypeus with very sparse and shallow medium-sized punctures, frons with a slightly more pronounced pattern, with punctures more deeply impressed, similar patterns observable on mesoscutum (often separated there by 1–2 diameters) and scutellum, mesopleuron also similar with denser punctuations on scrobal sulcus; metanotum smooth, unpunctured; propodeum

with weak punctuation only on sides; metasoma without any large punctures.

Vestiture. Most of face and dorsal two-thirds of clypeus with appressed whitish pubescence; vertex, frons and ventral margin of clypeus with sparse short erect hairs, longer hairs on clypeus (Fig. 1); eyes bare; similar patterns of decumbent and erect hairs on entire body, metasoma with erect hairs tending to be located near hind margin of terga and sterna.

Color. Dark brown, darker on head and dorsal section of mesosoma, lighter on mandible, clypeus, antenna, and metasoma; pale whitish marks as follows: circular marginal pattern on clypeus, paired marks on supraclipeal plate and interantennal area between antennal sockets, inner orbits rather widely, genal stripe widening below pronotal carina, elongated mesepisternal mark, lateral marks on mesoscutal margin adjacent to tegula and axillar region, narrow transversal anterior mark on scutellum and scutellar crest, narrow anterior mark on metanotum, axillar region and anterior face of fore coxa, elongated mark on fore tibia, apical spot on mid and hind femora and ventral metapleural plate, minute lateral mark on propodeum and lateral margin of metasomal tergum I, anterior band on tergum II, distal bands near posterior margin of terga II to VI, with associated small irregular lateral marks on terga III to V, most of the visible areas on sterna II to V.

Male unknown.

Nest unknown.

Etymology: the specific epithet *manauara* means “inhabitant of, or related to the Brazilian city of Manaus”.

Discussion

The outstanding differences between *Nectarinella manauara* sp. nov. and congeneric species refer to the very small size (ca. 30% smaller) and dark brown color of the former, contrasting with the yellow ground patterns of both *Nectarinella championi* and *Nectarinella xavantinensis*. The addition of these two aspects as a first step of the key provided by Carpenter & Mateus (2004) would suffice to diagnose the new species (see below). Additionally, the lateral margin of the clypeus is more strongly curved above and its separation from the eye narrower (compare Figs. 1 and 6), with apex roundly truncated rather than definitely rounded. The tentorial pit is equidistant from the clypeal margin and the antennal socket (being slightly closer to the latter in the other two species). The interantennal area is rather similar to that of *Nectarinella xavantinensis* in being strongly bulging, but does not form a V-shaped protuberance. The pronotal carina is more like that of *Nectarinella championi*, being not very sharp, with the humeral region being less raised and less projecting than in *Nectarinella xavantinensis*. The mesoscutal punctuation of *Nectarinella manauara* sp. nov. is less dense, and the integument more shining than in both congeneric species.

Nectarinella manauara sp. nov. is a small species that could be easily confused by the untrained eye with the species of *Leipomeles* Möbius, 1856 previously recognized as the separate genus *Marimbonda* Richards, 1978; the color pattern “brown with whitish marks” reinforces this general similarity. It can be distinguished from *Leipomeles*, however, by having the metanotum completely vertical and barely visible from above, metasomal tergum I significantly shorter, ca. 0.3× as long as wide (ca. 0.9× in *L. pusillus*), and occipital carina reduced to faint dorsal remnants. It is also different from species of *Marimbonda* in terms of the length of the hind wing cross-vein 1cu1 (being much shorter than cu-a). However, in that particular *Leipomeles* group, the pronotal carina descends at sides to a point well below the pronotal tubercle, being in this respect similar or intermediary in respect to the condition observed in *Nectarinella* (see Fig. 4). In more typical *Leipomeles* species, such

as *dorsata* (Fabricius, 1804) and *spilogastra* (Cameron, 1912), the pronotal carina is more similar to that observed in *Chartergellus*, which does not descend much further at sides.

The absence of an occipital carina has been considered the main feature shared by *Nectarinella* and *Chartergellus*, distinguishing them from *Leipomeles* (and *Marimbonda*), as for example in the generic key of Richards (1978). This character was also recognized as a synapomorphy of (*Chartergellus* + *Nectarinella*) by Carpenter (1991) and Wenzel and Carpenter (1994). Close examinations of *Nectarinella championi* (from Costa Rica; Fig. 5) and *Nectarinella xavantinensis* showed that they retain dorsal traces of the occipital carina as in *Nectarinella manauara* sp. nov. (Fig. 2), while no vestiges of the carina can be seen in *Chartergellus*. Strictly, this character may still be considered evidence of a sister group relationship between these genera if treated as a transformation series. Discovery of the male, larva and nest of *Nectarinella manauara* sp. nov. is expected to produce additional information relevant to the study of phylogenetic relationships between *Nectarinella* and other related genera.

Key to species of *Nectarinella* (based on Carpenter and Mateus, 2004)

1. Size very small, wing length 4.3 mm; color pattern dark brown with pale whitish marks; Brazil, Amazonas . . . *Nectarinella manauara* sp. nov.
- 1'. Size distinctly larger, wing length more than 5.0 mm; ground color mostly yellow . . . 2.
2. Frons elevated above antennae, forming a V-shaped protuberance; humeri produced forward in acute angle in dorsal view; clypeus wider than high; metasomal ground color brownish; Brazil, Mato Grosso . . . *Nectarinella xavantinensis* Mateus & Noll.
- 2'. Frons flat above antennae; humeri little produced in dorsal view; clypeus about as wide as high; metasomal ground color ochraceous. Costa Rica, Panama, Colombia . . . *Nectarinella championi* (Dover).

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgments

We are grateful to curators of the INPA and MZSP collections for making possible the study of *Nectarinella* specimens. We also thank Dr. James M. Carpenter (AMNH) for reading a previous version of the manuscript.

References

- Bequaert, J.C., 1938. A new *Charterginus* from Costa Rica, with notes on *Charterginus*, *Pseudocharterginus*, *Pseudopolybia*, *Epipona*, and *Tatua* (Hymenoptera, Vespidae). *Rev. Entomol.* 9, 99–117.
- Bequaert, J.C., 1944. The social Vespidae of the Guianas, particularly of British Guiana. *Bull. Mus. Comp. Zool.* 94, 249–300.
- Cameron, P., 1912. The Hymenoptera of the Georgetown Museum. Part III. The Marabuntas or wasps. *Timehri: J. R. Agric. Commer. Soc. Br. Guiana* 2, 207–231.
- Carpenter, J.M., Mateus, S., 2004. Males of *Nectarinella* Bequaert (Hymenoptera, Vespidae, Polistinae). *Rev. Brasil. Entomol.* 48, 297–302.
- Carpenter, J.M., 1991. Phylogenetic relationships and the origin of social behavior in the Vespidae. In: Ross, K.G., Matthews, H.W. (Eds.), *The Social Biology of Wasps*. Cornell University Press, Ithaca.
- Dover, C., 1925. Notes on the genus *Nectarina* Shuckard (Vespidae). *Psyche (Stuttg)* 31, 305–307.
- Mateus, S., Noll, F.B., 1997. *Nectarinella xavantinensis*, a new neotropical social wasp (Hymenoptera: Vespidae; Polistinae). *J. N.Y. Entomol. Soc.* 105, 45–49.
- Richards, O.W., 1978. *The Social Wasps of the Americas, Excluding the Vespinae*. British Museum (Natural History), London.
- Wenzel, J.W., Carpenter, J.M., 1994. Comparing methods: adaptive traits and tests of adaptation. In: Eggleton, P., Vane-Wright, R.I. (Eds.), *Phylogenetics and Ecology*. Academic Press, London, pp. 79–101.