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Research paper

A new species of *Dolichurus* Latreille (Hymenoptera, Apoidea, Ampulicidae) from Brazil

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Abstract

A new species of Dolichurus *Latreille (Hymenoptera, Apoidea, Ampulicidae) from Brazil. Dolichurus sensei* Ferreira and Lopez sp. nov. is described based on a single female specimen from a Neotropical savanna fragment in São Carlos, São Paulo, Brazil. We include images of the holotype and provide an additional commentary on its coloration.

Key words: Neotropical, Cockroach, Wasp, Ectobiidae, Parasitoid

Resumen

Una nueva especie de Dolichurus *Latreille (Hymenoptera, Apoidea, Ampilicidae) en el Brasil*. La descripción de *Dolichurus sensei* Ferreira y Lopez sp. nov. se basa en un único espécimen hembra recolectado en un fragmento de sabana neotropical de São Carlos, en São Paulo (Brasil). Se incluyen imágenes del holotipo y se ofrecen comentarios adicionales sobre la coloración.

Palabras clave: Neotropical, Cucaracha, Avispa, Ectobiidae, Parasitoide

ZooBank LSID: http://zoobank.org/urn:lsid:zoobank.org:pub:76936620-3ECD-47F1-98BA-820A2889BF06

Introduction

Species of the subfamily Dolichurinae (Apoidea, Ampulicidae) are rather small cockroach hunting wasps. Although these ampulicids are widespread worldwide, they are rarely encountered in South America and have seldom been studied (Dode 1985, Ducke 1910, Kimsey 1993, Kohl 1893). In the Neotropical Region, two genera occur: *Paradolichurus* Williams and *Dolichurus* Latreille, with only five species described: *P. boharti* Kimsey (Costa Rica), *P. obidensis maranhensis* Ducke (Brazil), *P. morelensis* Williams (Brazil), *D. laevis* Smith (Amazon, Brazil) and *D. cearensis* Ducke (Maranhão and Ceará, Brazil). According to Bohart and Menke (1976), *D. cearensis* and *D. laevis* are the only *Dolichurus* species occurring in the Neotropics. *Dolichurus* is a cosmopolitan genus, mainly characterized by a raised U-shaped plate and platformlike extension of frons that overlaps the antennal sockets and well-developed notauli (Bohart and Mencke 1976). These wasps are typically swift runners that hunt for their cockroach prey on the ground or on tree trunks, nesting in stems or crevices (Bohart and Mencke 1976). Here, we describe a hitherto unknown species of *Dolichurus* from Brazil.

Material and methods

Fieldwork was conducted on December 1, 2018, in a Neotropical savannah fragment located near the Federal University of São Carlos (UFSCar) in the city of São Carlos–SP (22° 00' 55'' S, 47° 53' 28'' W) (fig. 1). The wasp was observed on a sand road carrying the paralyzed host towards the forest. This region is situated at elevations ranging from 815 m to 895 m and is characterized by a subtropical climate, with dry seasons extending from April to September, followed by a wet season from October to March (Alvares et al 2013). The annual average temperature is 19.6 °C, and the yearly average total precipitation is 1,495.1 mm. The university has approximately 26 %

Fig. 1. A, B, habitat of *Dolichurus sensei* Ferreira and Lopez sp. nov. in São Carlos, Brazil. C, region near the collection site.

Fig. 1. *A, B., hábitat de* Dolichurus sensei *Ferreira y Lopez sp. nov. en São Carlos, Brasil. C, zona cercana al lugar de recolección.*

of its land area (162.21 ha) defined as Legal Reserve Areas, which include Permanent Preservation Areas totaling 61.77 ha.

For a comparative analysis, we studied a picture of the female lectotype of *D. laevis* from the London National History Museum (courtesy of David Notton, and the NHM 2014). We also studied a male syntype of *D. cearensis* from the Goeldi Museum of Pará. The male holotype of *D. cearensis* is lost, and the species is briefly described by Ducke (1910). We examined, however, a female of this species, collected in Goiás state (Brazil), deposited at the Museum of Zoology in São Paulo, which was identified by Dr. Sérvio Túlio P. Amarante. The photographs were taken using stereomicroscope Leica S9i (Leica Microsystems, Wetzlar, Germany) under Helicon Remote 3.9.10.w software. Photographs were combined into single images using Helicon Focus 7.7.4 Pro (Helicon Soft Ltd, Kharkiv, Ukraine) stacking software.

The morphological terminology used here follows that of Bohart and Menke (1976) and cuticular sculpturing nomenclature, Harris (1979). The terms and abbreviations used in the text are in accordance with Anagha et al (2020) and are as follows: BL, body length, measured from tip of head to apex of the metasoma; F, flagellomere, single article of flagellum; frontal platform, a median U-shaped platform-like extension on the frons that overhangs the antennal bases; IOD, interocular distance, distance between compound eyes measured medially; LOL, lateral ocel-

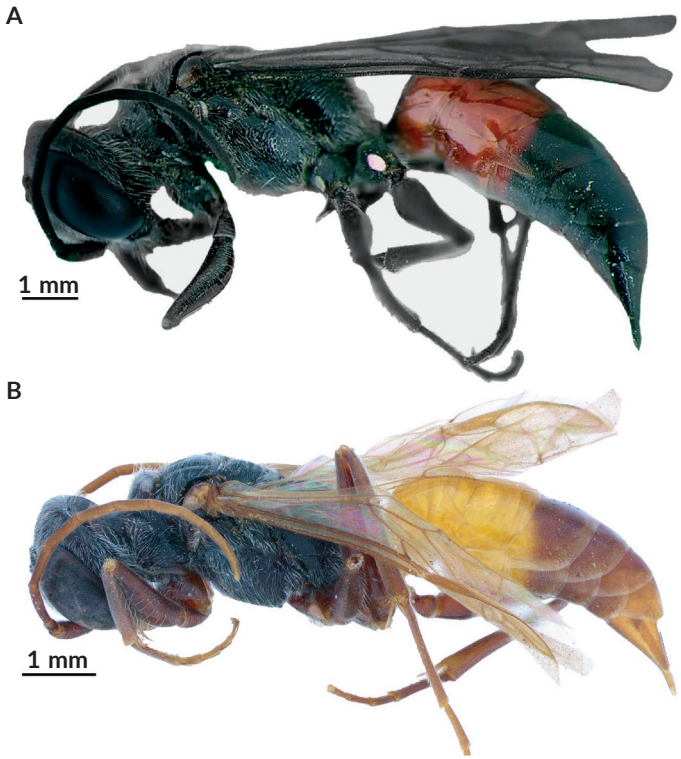

Fig. 2. *Dolichurus sensei* Ferreira and Lopez sp. nov. holotype female: A, original specimen coloration; B, specimen coloration post-ethanol preservation.

Fig. 2. Dolichurus sensei *Ferreira y Lopez sp. nov., holotipo hembra: A, coloración original del espécimen; B, coloración del espécimen conservado en etanol.*

lar length, describes the distance between anterior ocellus and posterior ocellus measured medially; OOL, ocellocular length, refers to the distance between the compound eye and posterior ocellus measured medially; POL, posterior ocellar length, distance between posterior ocelli measured medially; T, tergum, pertains to the metasomal terga. The wasp and host were deposited in the Laboratory of Ecological Studies on Ethology and Evolution (LESTES) collection at the Federal University of Triângulo Mineiro (UFTM), Uberaba, Brazil (voucher number: HYM-005/11).

Taxonomy

***Dolichurus sensei* sp. nov. Ferreira and Lopez, 2024**
ZooBank LSID: http://zoobank.org/urn:lsid:zoobank.org:act:757AF490-C347-4C88-8A42-0751BA7CEC19

Type material

Holotype female, deposited at the LESTES collection at UFTM with the following labels: "Brazil, São Paulo, São Carlos, Cerrado UFSCar (22° 0' 55" S, 47° 53' 28" W), 01-xii-2018, Guillermo-Ferreira, R. col." (white label); "Holotype *Dolichurus sensei* Ferreira and Lopez sp. nov." (red label). No additional specimens were found despite extensive search attempts.

Diagnosis

This species can be distinguished from *D. laevis* and *D. cearensis* by the following combination of charaters: white spots at base of meso- and metacoxae, not present in *D. laevis* and *D. cearensis*; bicolored metasoma: T1 and T2 reddish, others segments black, while abdomen is black with the apical segment, and the margins of the other segments, narrowly rufo-piceous in *D. laevis*, and entirely red in *D. cearensis*; clypeus with weak inconspicuous rounded angle in middle third of length; frontal platform with upcurved margins and auricular posterolaterally, sides sinuous, surface punctate and concave medially, while there is no such curving in *D. laevis* and *D. cearensis*, frontal platform with whitish anterior margins in *D. laevis*.

Description

Female: BL 9 mm.
Color**:** head, mesosoma, palpi, mandibles, clypeus, antennae black, femora, tibiae, and tarsi black, except for white spots at base of the clypeus, pronotal tubercle, meso and metacoxae and tegula blackish brown (fig. 2A); T1 and T2 red, T3–T5 black (fig. 2A); wings clear hyaline with veins black (fig. 2A).

Head: rounded in frontal view, with pale setae, thicker on internal eye margins; vertex slightly arched

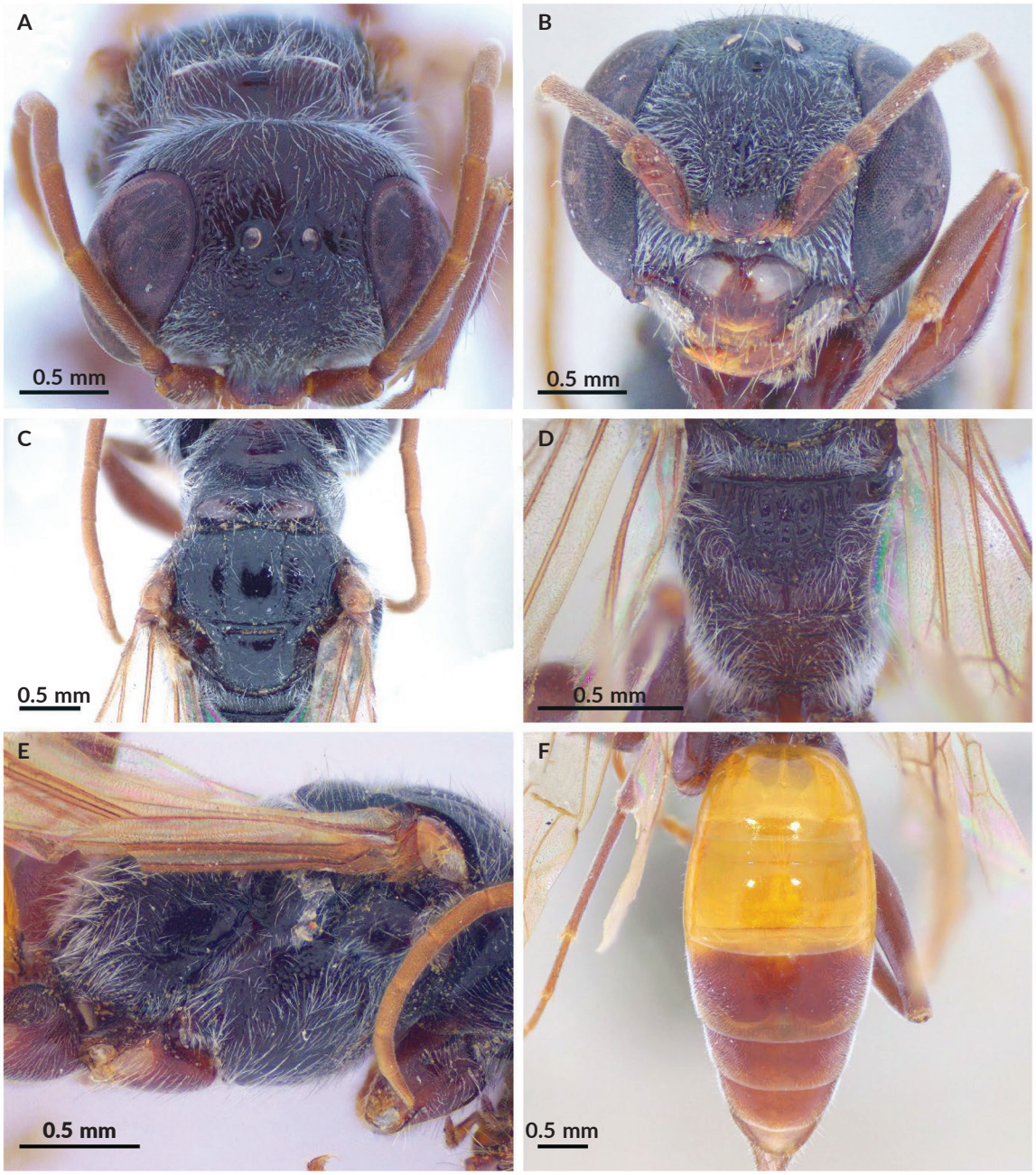

Fig. 3. *Dolichurus sensei* Ferreira and Lopez sp. nov., holotype female: A, upper half of the head, front view; B, head, frontal view; C, mesosoma, except the propodeum; D, propodeum; E, mesosoma, lateral view; F, metasoma, dorsal view.

Fig. 3. Dolichurus sensei *Ferreira y Lopez sp. nov., holotipo hembra: A, vista frontal de la mitad superior de la cabeza; B, vista frontal de la cabeza; C, mesosoma excepto el propodeo; D, propodeo; E, vista lateral del mesosoma; F, vista dorsal del metasoma.*

above eyes (fig. 3A); head 1.66× IOD; occiput with long sparse white setae; POL 1.4× LOL and 0.85× OOL; clypeus with inconspicuous rounded angle in middle third, apical margin with carina, with sparse pilosity and two pale lateral spots at base (fig. 3B); frons reticulate (fig. 3B), vertex and occiput polished with white setae on dorsal view, vertex with scattered setigerous punctures laterally (fig. 3A), with inner eye margins almost parallel except emarginate at middle; frontal platform as broad as long with upcurved margins and auricular posterolaterally, sides sinuous, surface punctate and concave medially; F1 0.75× combined length of F2 and F3.

Mesosoma: in dorsal view (fig. 3C), pronotal collar anteriorly marginate and centrally depressed, central region smooth, impunctate, unsculptured, polished, and asetose, with some transverse rugulae, dorsally with scattered setaceous punctures, elevated dorso-lateral tubercle with two white spots, lateral pronotal surface

smooth, with scattered fine punctures; scutum and scutellum with scattered setaceous punctures; mesopleuron shiny and markedly more setose than scutum, sternaulus absent; metanotum with regular longitudinal carinae, covered with pale setae, sparse medially; propodeal enclosure subrectangular, rugulose anteriorly and medially, strigated posteriorly, with two lateral bands of pale setae converging posteriorly (fig. 3D); lateral surface of propodeum strigated longitudinally (fig. 3E); meso- and metacoxa with large lateral white spots anterolaterally.

Metasoma: T1 and T2 entirely asetose, smooth and polished, T3–T5 covered with fine pale setae, denser laterally, with tiny punctures dorsomedially (fig. 3F).

Male: unknown.

Distribution

Known only from the type locality in São Carlos-SP, Brazil

Etymology

The specific name 'sensei' is of Japanese origin and serves as an honorable title to express respect and reverence for a teacher or master. This name was chosen as a tribute to all the black belt instructors of Brazilian Jiu Jitsu, especially Alexandre Oliveira, Frederico Sousa Hirose, Leonardo Moura Amado, and Thiago Massaiti, who are not only exceptional educators in the realm of jiu-jitsu but also exemplify the essence of the black belt. In naming this species 'sensei', we pay homage to their dedication and expertise, symbolizing the guiding influence they have had on our journey.

Host

Aglaopteryx sp. Hebard (Blattaria, Ectobiidae, Pseudophyllodromiinae).

Discussion

The species here described has white markings on the clypeus and no occipital carina, traits that differ the New World species from those of the Old World (Bohart and Mencke 1976). Most *Dolichurus* females exhibit a black metasoma with the apex red, while in some it is all black or all red (Bohart and Mencke 1976). *Dolichurus sensei* sp. nov. differs from other species by the base of the metasoma being red and the apex black, with white markings on legs. It is noteworthy that only a male syntype of *D. cearensis* exists, and comparison with this species was limited to non-type material.

When collected, the wasp exhibited distinct coloration. The head, mesosoma, antennae, clypeus, legs, and wing venation were predominantly black, while T1 and T2 presented a red-ferruginous hue, and T3-T6 were black (fig. 2A). However, due to the specimen's storage in absolute ethanol from 2018 to 2023, certain color changes have occurred. Currently, the antennae, clypeus, legs, wing venation, and metasoma have lost natural colors. Parts that were previously black have transitioned to a reddish-orange tone, while T1 and T2, previously red-ferruginous, have lightened to a pale orange (fig. 32B). These alterations in coloration are attributed to the preservation method.

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Conflicts of interest
No conflicts declared

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