



New record of *Dolichorhinotermes lanciarius* Engel & Krishna, 2007 (Blattodea, Rhinotermitidae) from Colombia

Olga Patricia Pinzón-Florián¹

¹ Laboratorio de Sanidad Forestal, Universidad Distrital “Francisco José de Caldas”, Bogotá, Colombia • opatriciap@udistrital.edu.co <https://orcid.org/0000-0002-5858-4083>

Abstract

Dolichorhinotermes Snyder & Emerson, 1949, a genus of Neotropical distribution, includes seven living termite species characterized by the presence of distinct major and minor soldiers. In Colombia, to date, only *Dolichorhinotermes longilabius* (Emerson, 1924) has been recorded in the Colombian Amazon Basin. A new distribution record of *Dolichorhinotermes lanciarius* Engel & Krishna, 2007 (Rhinotermitidae, Rhinotermitidae) is reported from an Andean region of the Department of Caldas, Colombia, where it was found at an altitude of 2100 m.

Keywords

Pensilvania, Caldas, Rio La Miel, xylophagous termite, biodiversity, alate nymph

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Introduction

The genus *Dolichorhinotermes* Snyder & Emerson, 1949, originally described with the type species *Rhinotermes longilabius* Emerson, 1925, groups seven living and two extinct Neotropical termite species (Krishna et al. 2013). Recognized species and geographic distribution (Krishna et al. 2013) are as follows: *D. japuraensis* Constantino, 1991 from the Brazilian Amazon; *D. latilabrum* (Snyder, 1926) from Bolivia; *D. lanciarius* Engel & Krishna, 2007 from Ecuador; *D. longidens* (Snyder, 1924) from Panama; *D. longilabius* (Emerson, 1924) from Brazil, French Guiana, Guyana, and Trinidad; *D. neli* Ensaf & Betsch, 2002 in French Guiana; and *D. tenebrosus* (Emerson, 1925) from Guyana. There are two fossil species, *D. dominicanus* Schlemmeyer & Canello, 2000 from the Dominican Republic and *D.*

apopnus Engel & Krishna, 2007 from Chiapas, Mexico. Additional geographical records of *D. lanciarius* from Peru and Bolivia were made available by Scheffrahn (2021). *Dolichorhinotermes* comprises xylophagous species known to nest in rotten wood. *Dolichorhinotermes longilabius* is the only species of the genus considered to be a pest of buildings and timber (Krishna et al. 2013).

The Colombian termite fauna from the Andean region is poorly known and undersampled. In Colombia, only one species of *Dolichorhinotermes*, *D. longilabius*, has been recorded at altitudes up to 500 m in the Amazon region (Beltrán and Pinzón 2018; Castro et al. 2021). I report here *D. lanciarius* for the first time from Colombia, where this species was found in an Andean region of the Department of Caldas at 2100 m of altitude.

Methods

Termites were manually collected from pieces of rotten logs in contact with the ground. Specimens were stored in 85% ethanol and deposited in the Colección Entomológica Forestal CEFUDFJC (RNC 045), and a COI sequence was published in the Barcode of Life Data (BOLD). Measurements and photographs of specimens were made using a Discovery V8 Carl Zeiss stereomicroscope utilizing an automated multi-layer system and combined using ZEN or Helicon Focus software. A map showing the current known distribution of *D. lanciaris* was produced using the ArcGIS software v. 10.6. (Fig. 2).

Dolichorhinotermes lanciolarius was identified using the keys to genera and species (Krhisna et al. 2013; Castro and Scheffrahn 2019) and the original description of *D. lanciaris* (Engel and Krishna 2007). The sample collected in 1998 did not require a collection permit,

while the sample from 2016 was collected under the permit ANLA 2014 0738.

Results

Dolichorhinotermes lanciaris Engel & Krishna, 2007

Figure 1A–I

New records. COLOMBIA – Caldas • Pensilvania, Vereda Buenavista; 05°23'36"N, 075°09' 19"W; 2100 m alt.; 21.VI.1998; P. Pinzón; secondary forest remnant; in rotten wood; 1 major soldier, 5 workers; CEFUDFJC-CONIF 11081 (in 85% ethanol) • Pensilvania, Rio La Miel; 05°17'23"N, 075°09'16"W; 2100 m alt.; 15.IV.2016; P. Pinzón; secondary forest remnant; in rotten wood; 9 minor soldiers, five pre-soldiers, 15 workers, one alate nymph; CEFUDFJC 201402 (85% ethanol), <https://doi.org/10.5883/BOLD:ADK8326>.

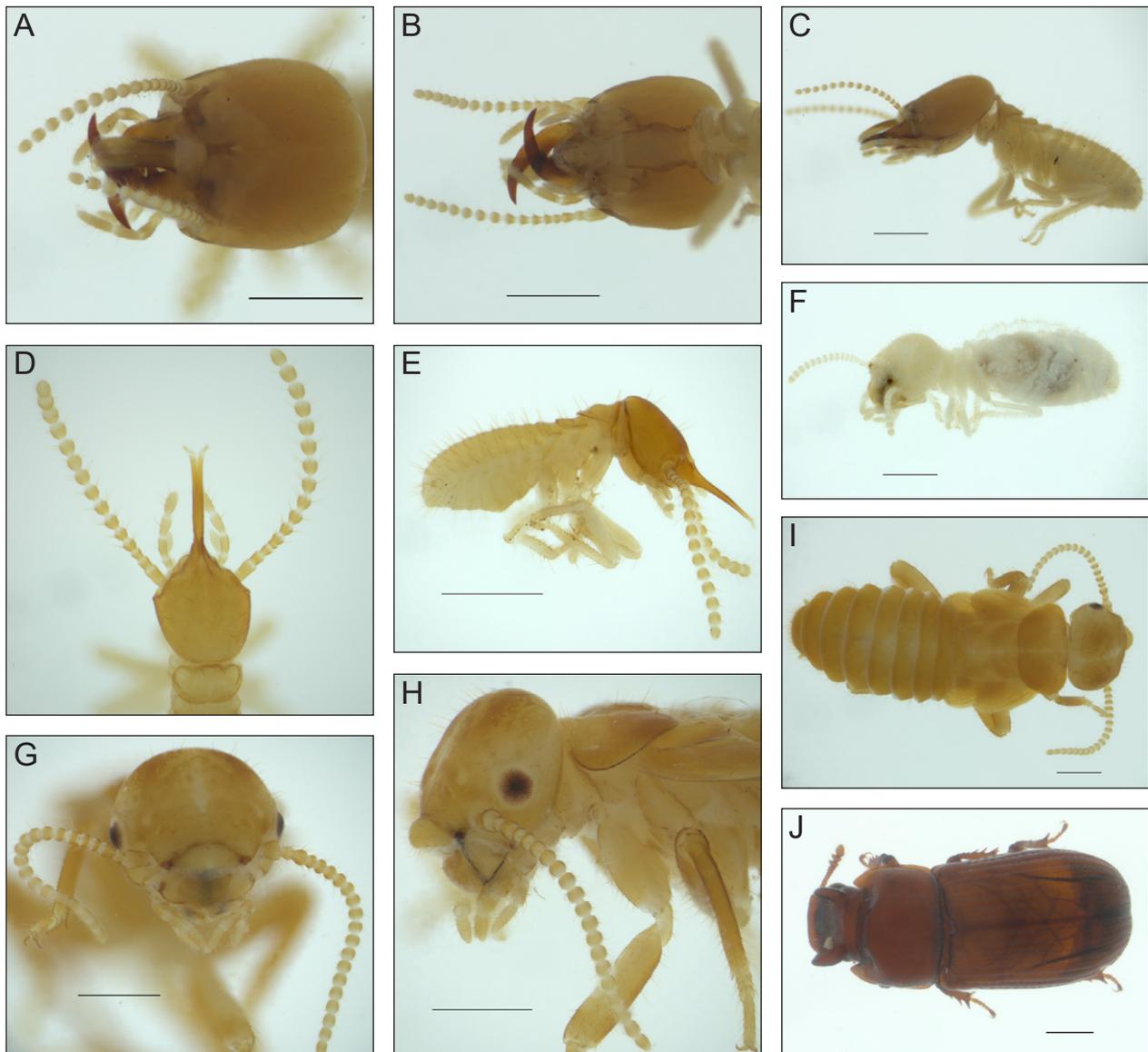


Figure 1. *Dolichorhinotermes lanciolarius* from Colombia. **A–C.** Major soldier: **(A)** head in dorsal view; **(B)** head in ventral view; **(C)** body in lateral view. **D, E.** Minor soldier: **(D)** head in dorsal view; **(E)** body lateral view. **F.** Worker, body in lateral view. **G–I.** Nymph: **(G)** head in frontal view; **(H)** Head in lateral view; **(I)** body in dorsal view. **H.** *Peneta* sp. (Tenebrionidae, Prenapatinae) in dorsal view.

Identification. *Dolichorhinotermes lanciarius* is the largest species in the genus, particularly the soldier caste (Engel and Krishna 2007). In the collected specimens, the length of the major soldier head, including mandibles (2.62 mm), the head width (1.68 mm), and the pronotum width (0.89), coincide with the size of the soldiers from the original description. On the other hand, the minor soldier metrics, such as head length, including the labrum, labrum length, head width, and pronotum length and width, are slightly larger than those metrics given Engel and Krishna (2007). The anterior border and shape of the pronotum of a minor soldier of the Colombian specimens differ from the original description of the species (Engel and Krishna 2007: 4, fig. 2A). While the original description indicates a rounded anterior border, the Colombian samples have a wide anterior border with three lobes (Fig. 1D).

The dentition of the major soldier mandibles (not shown) is another significant character in the recognition of *D. lanciarius*. According to Engel and Krishna (2007: 5): “left mandible with two stout teeth, first just apical of midpoint, second just basal of midpoint, first tooth distinctly longer than second tooth, first tooth slightly curved along posterior surface, second tooth straight; right mandible with two teeth near midpoint, first tooth shorter than second tooth and both shorter than those of left mandible, second tooth extending straight out from inner mandibular surface, first tooth running closer along mandibular surface”.

Another feature unique to *D. lanciarius* is the shape of the major and minor soldier labra. Major soldiers (Fig. 1A, B) have “labrum elongate, slightly wider at apex, apex rounded, without emargination, with slight dorsal, longitudinal depression extending posteriorly from apical margin about one-half of labral length” (Engel and Krishna 2007: 3), as shown in Figure 1A. In addition, the labrum from the minor soldier exhibits a pronounced apical labral forking, as shown in Figure 1C, and “... several erect, pale yellow setae at apex, otherwise dorsal surface with scattered, short, pale yellow setae, setae slightly more numerous in apical half” (Engel and Krishna 2007: 4). Minor soldier head also presents “gently convex, sides converging anteriorly, and slightly converging from midpoint posteriorly to a gently rounded posterior border than basal half” (Engel and Krishna 2007: 3), as illustrated in Figure 1D. Noteworthy of this species minor soldier is the lance-like labrum shown in Figure 1E.

Alate nymphs are substantially larger than the other castes (Fig. 1G–I), having the body, legs, head, and antennae yellow with light brown highlights. The head capsule is oval, almost as wide as the pronotum, and covered with abundant long bristles. The moniliform antenna has 20 antennomeres covered with long bristles, being the basal flagellomere distinctly larger than the second. Eyes are dark brown, bordered by clear margins, and there are two light, non-prominent circular ocelli distant from the compound eyes. The clipeus is oblong

with a rounded margin and covered by long bristles. The pronotum has rounded borders, wider anteriorly, covered by long sparse bristles and several shorter erect bristles in the anterior border behind the head. In contrast, the posterior border is slightly emarginate at the center. The head width of a single alate nymph is 2.1 mm, the head length to the labrum apice is 2.1 mm, and the pronotum width is 2.5 mm.

Ecological observations. An adult of the genus *Peneta* sp. (Tenebrionidae, Prenapatinae), living in association with *D. lanciarius* in a heavily infested log, is shown in Figure 1J.

Distribution. Records of *D. lanciarius* from the literature are shown in Figure 2.

Discussion

In Colombia, most recorded genera and species of termites in collections are from below 1000 m altitude (Casalla and Korb 2019; Castro et al. 2021; Pinzón et al.

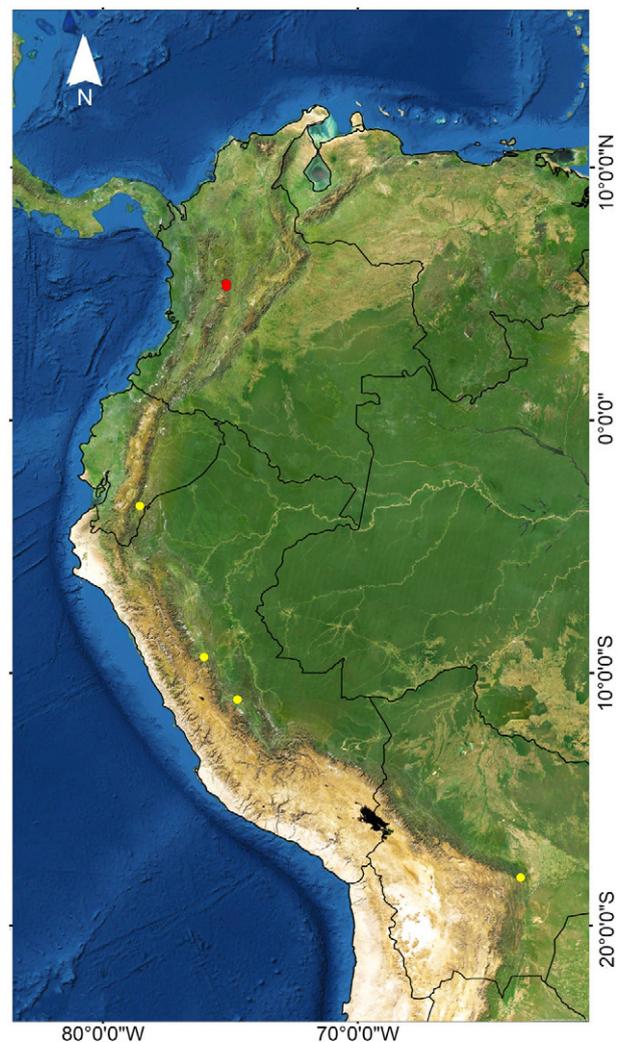


Figure 2. Distribution localities of *Dolichorhinotermes lanciarius*. Red dot: new record from Colombia; yellow dots: previous records (Engel and Krishna 2007; Castro and Scheffrahn 2019; Scheffrahn 2021).

2017; Vargas et al. 2005), and there are few records from above 2000 m altitude. Here, *Dolichorhinotermes lanciarius* is reported for the first time in the country, from a mountainous region in the Department of Caldas at 2100 m altitude. This region has a humid climate with average annual precipitation of 2000 mm and a mean annual average temperature of 17 °C.

The samples were collected in rotten logs in a remnant of secondary forest surrounded by an area dedicated to livestock and commercial forest plantations. However, *D. lanciarius* was not found to be damaging living trees or crops. This is consistent with previous accounts in which *D. lanciarius* has not been observed in forest plantations and crops, and is not considered a pest species in Bolivia and Brazil (Constantino 2002; Krishna et al. 2013). In the nearby collecting region, no other species of termites are known to occur to date.

Only one type of soldier of *D. lanciarius* was collected in each collecting season in Colombia, suggesting that the season influenced the occurrence of the soldier caste. Likewise, fewer major soldiers were found than minor soldiers, coinciding with Engel and Krishna's (2007) findings in Ecuador.

This new record occurred outside the Amazon region, where most known extant *Dolichorhinotermes* species occur. The known distribution of *D. lanciarius* is extended more than 1000 km north and at an altitude greater than 1000 m above that of the type locality of the species.

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