



Dentispicotermes trapezia (Isoptera: Termitidae: Amitermitinae), a new termite species from the Pantanal-Chaco Region of South America

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Abstract

Dentispicotermes trapezia sp. nov. is described from the soldier and worker castes of specimens collected in Pantanal-Chaco Region of Bolivia and Paraguay. The soldiers differ from its five congeners in having a trapezoidal frontal protuberance with in-line marginal teeth. A key to *Dentispicotermes* soldiers is provided.

Key words: Bolivia, Paraguay, soldier, worker, cephalic projection

Introduction

Five species of *Dentispicotermes* Emerson, 1949, all from South America, are known including *D. brevicarinatus* (Emerson, 1950), *D. conjunctus* Araujo, 1969, *D. cupiporanga* Bandeira and Cancellato, 1992, *D. globicephalus* (Silvestri, 1901), and *D. pantanalensis* Mathews, 1977. *Dentispicotermes* is a relatively uncommon termite genus characterized by soldiers with long thin snapping mandibles, a conical cephalic projection, and large yellow labial glands that extend well into the abdomen.

Emerson (1950) originally described *D. brevicarinatus* into a new genus *Spicotermes*, because the soldier mandibles lacked marginal teeth which he thought was a primitive character worthy of generic status. Mathews (1977) synonymized *Spicotermes* into *Dentispicotermes*. *Dentispicotermes* spp. are soil feeders and workers of species that have been studied have very diagnostic enteric valve armature (EVA) but apparently have no discernable intraspecific differences. Herein, I describe a sixth species, *Dentispicotermes trapezia* sp. nov.

Material and methods

Photomicrographs (Figs. 1–5A) were taken as multi-layer montages using a Leica M205C stereomicroscope controlled by Leica Application Suite version 3 software. Preserved specimens were taken from 85% ethanol, dissected as needed, and suspended in a pool of Purell® hand sanitizer (70% EtOH) to position the specimens over a transparent plastic Petri dish background. The worker EVA was prepared for photography by removing the 2nd proctodeal segment (P2) and submerging it in a droplet of PVA medium (BioQuip Products Inc.) which eased muscle detachment and removal. The remaining P2 cuticle was longitudinally cut and mounted on a microscope slide (Fig. 5B) and photographed with a Leica DM5500B compound microscope using the same Leica software.

The distribution map (Fig. 7) was produced using ArcGIS Pro Intelligence 3.0 software (Redlands, Calif.) with a biome basemap transparency from Turchetto-Zolet *et al.* (2013). The field photograph of live specimens, placed in a filter paper-lined Petri dish (Fig. 6), was taken with a Nikon Coolpix S7c camera.

Material examined. PARAGUAY. Private Reserve forest (-23.050, -56.728); col. R.H. Scheffrahn; 30MAY2012; 151 m elev.; one holotype soldier and workers under a stone with *Termes* sp. soldiers and workers and workers of a small undescribed apicotermite (Fig. 6); vial no. PA537 of the University of Florida Termite Collection (UFTC),

Davie, Florida. BOLIVIA. Chochis (-18.107, -60.087); col. R.H. Scheffrahn; 31MAY2013; 510 m elev.; one soldier and workers under a stone with workers of small, medium, and large workers of three undescribed apicotermitine spp.; UFTC no. BO816.

***Dentispicotermes trapezia* sp. nov.**

Dentispicotermes sp. nov. 2, Issa & Scheffrahn 2020 fig. 3.

Dentispicotermes n. sp. 2, Hellemans *et al.* 2024 fig. 1. GenBank accession no. OL875049.1

Imago. Unknown.

Soldier (Figs. 1, 2, 6). Head capsule in dorsal view (Fig. 1A) narrowing toward anterior, anterolateral corners with stubby knobs; very slight constriction in posterior third; posterior margin evenly convex. In lateral view (Fig. 1B) head ellipsoid with steep frontal protuberance behind antennal sockets; frontal protuberance narrowly trapezoidal (Fig. 2A) and conical in anterior (Fig. 2B) and posterior view (Fig. 1D).

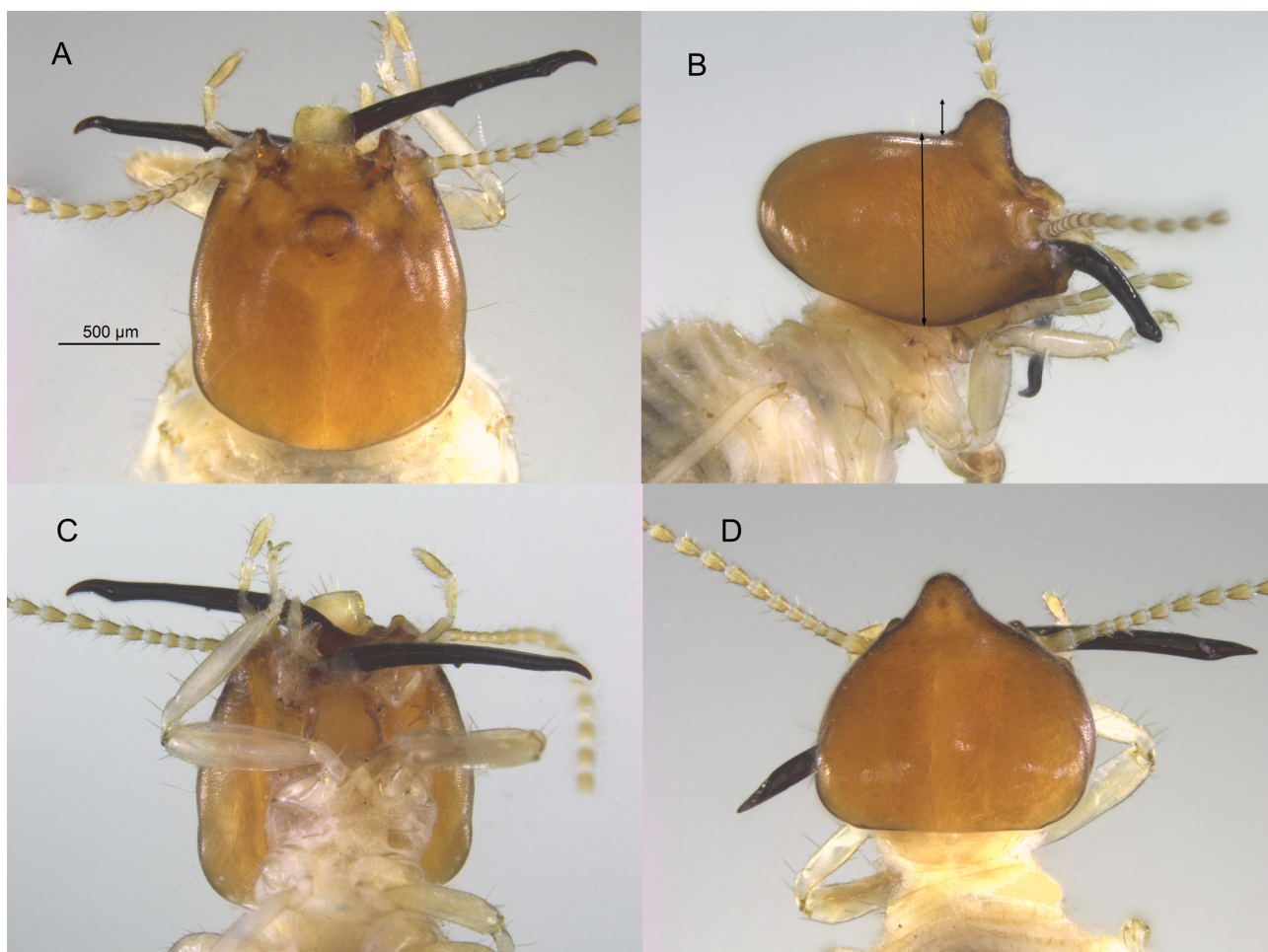


FIGURE 1. Holotype soldier of *Dentispicotermes trapezia* sp. nov.: A) dorsal, B) lateral (vertical lines show head height relative to protuberance height), C) ventral frontal and D) posterior view.

Frontal protuberance with tiny wart-like bump near middle of posterior margin (Fig. 2A) and two curved setae on either side near summit (Fig. 2B); summit without opening. Postmentum extending below genae, but not excessively so. Head capsule with pair of long straight setae on vertex behind protuberance and pair projecting laterally anterior to constriction. Four straight setae on submentum. Mandibles symmetrical, nearly straight with slight bend near bases; apical hooks about one-seventh of mandible lengths. Each mandible with triangular marginal teeth about two fifths length from hooks in lateral view when in resting position (Fig. 6). Thorax and anterior two

thirds of abdomen filled with yellow defensive secretion. Antennae with 14 articles, or 15 if third subdivided, article formulae $2>3=4<5$ or $2>3=4\leq 5$; Tibial spur formula: 2:2:2.

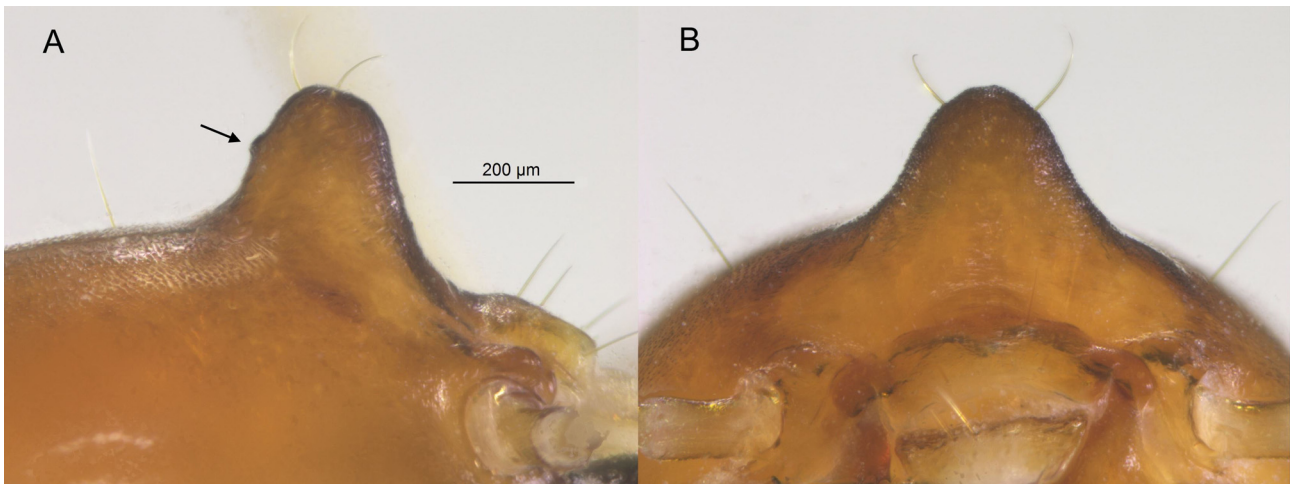


FIGURE 2. Soldier cephalic projection of *Dentispicotermes trapezia* sp. nov.: A) lateral (arrow points to tubercle) and B) anterior view.

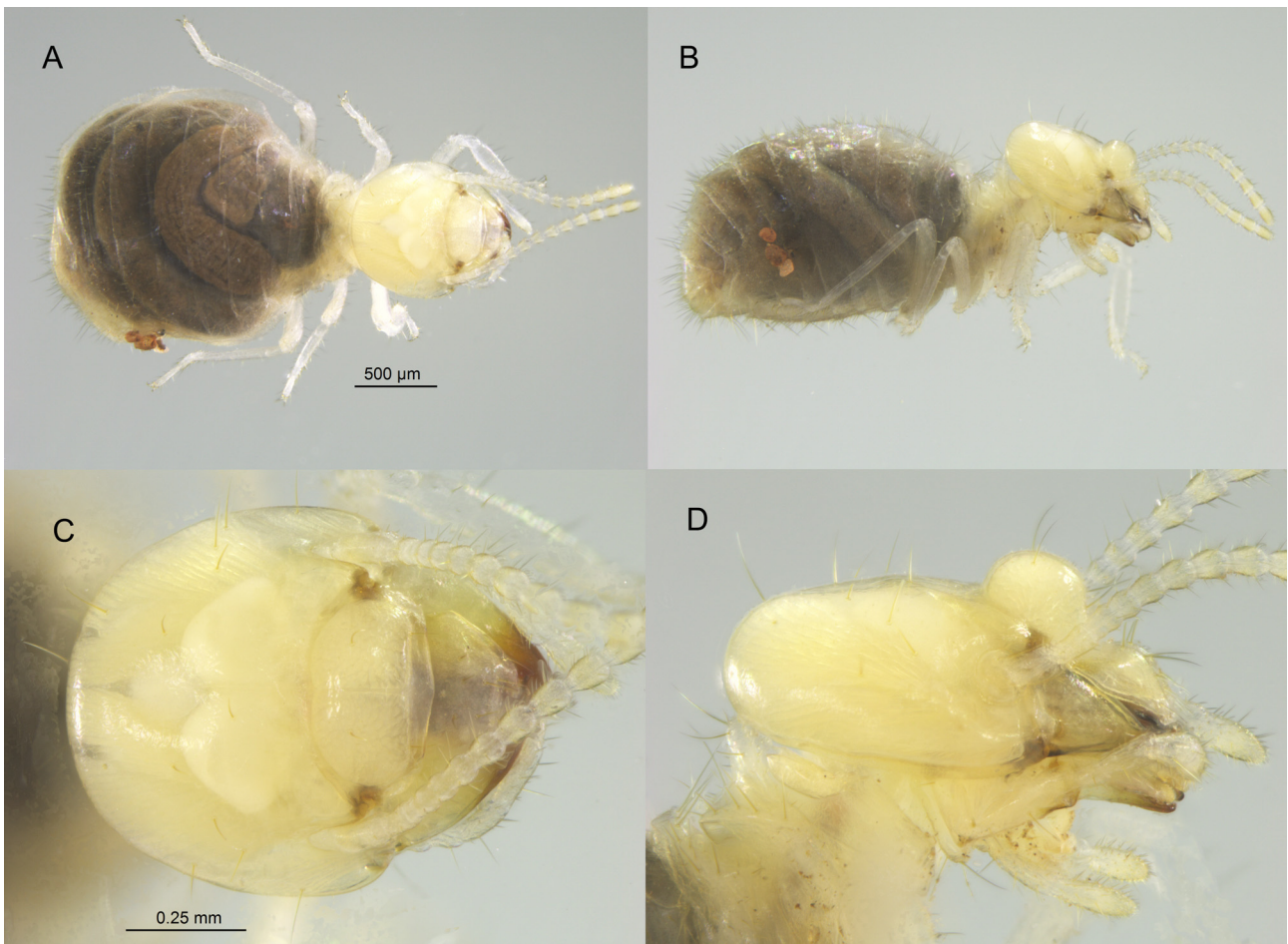


FIGURE 3. Worker of *Dentispicotermes trapezia* sp. nov.: A) dorsal and B) lateral habitus; C) dorsal and D) lateral head capsule.

Measurements. Head capsule length to postclypeus (mm) 1.59, 1.50; left mandible length to ventral condyle 1.54, 1.52; right mandible length to ventral condyle 1.53, 1.52; head width at antennal socket 1.06, 1.05; max. head width 1.30, 1.35; max. head capsule height (postmentum to protuberance) 1.25, 1.17; protuberance height from

plane of vertex 0.25, 0.25; max. postmentum width 0.20, 0.19; max. postmentum height, 0.16, 0.16; max. pronotum width, 0.81, 0.78.

Worker (Figs. 3–6). Monomorphic. Abdomen subspherical in dorsal view (Fig. 3A, 6); integument transparent covered with hundreds of long setae. Postclypeus fully inflated in lateral view (Fig. 3D). Pronotum angled ca.100° with anterior lobe larger than posterior; about 8–10 long setae along lobe margins. Tibial spur formula: 2:2:2. Fontanelle barely visible. Head capsule covered with sparse long setae. Antennae with 14 articles, or 15 if third subdivided.

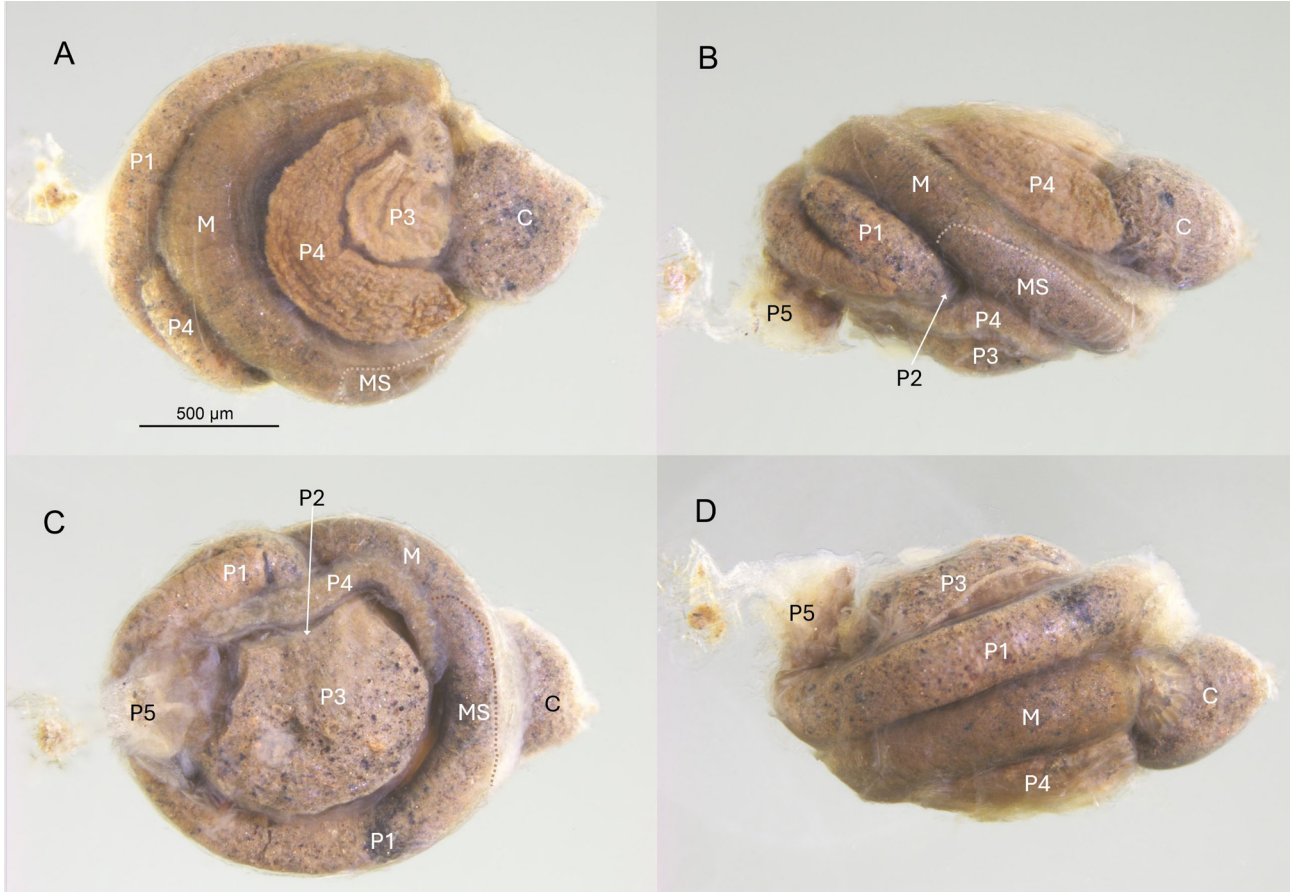


FIGURE 4. Worker gut of *Dentispicotermes trapezia* sp. nov.: A) dorsal, B) right, C) ventral, and D) left view (labels: C= crop, M=mesenteron, MS= mixed segment, P1=proctodeal segment 1, P2=enteric valve with EVA seating, P3–P5=proctodeal segment 3–5).



FIGURE 5. Worker mandibles (A) and enteric valve armature (B) of *Dentispicotermes trapezia* sp. nov.



FIGURE 6. Field habitus of the soldier and worker (larger specimen) of *Dentispicotermes trapezia* **sp. nov.**

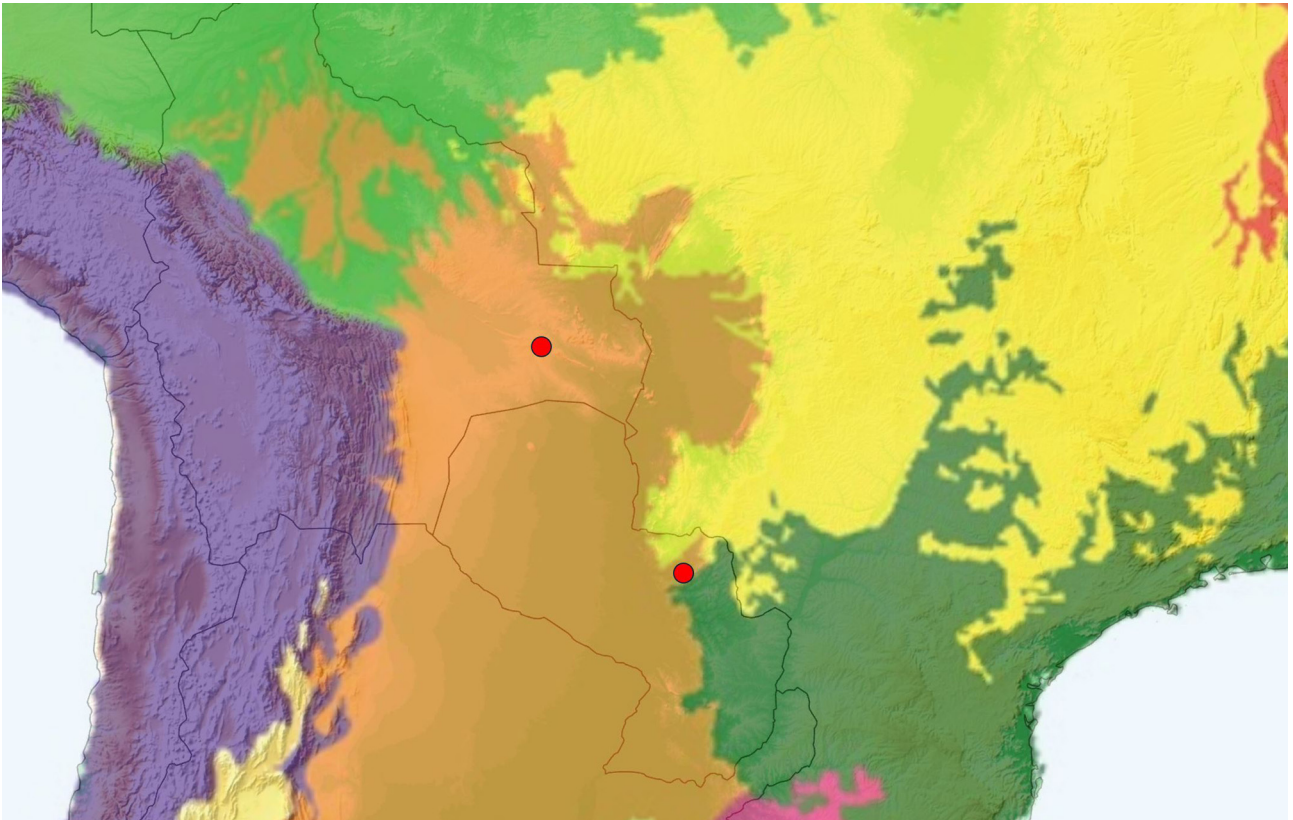


FIGURE 7. Localities (red dots) of *Dentispicotermes trapezia* **sp. nov.** Orange biome is Chaco/Pantanal from Turchetto-Zolet *et al.* (2013).

Digestive tube with spherical and large crop developed; mixed segment with narrow mesenteric tongue (Fig. 4A–C); P1 forming a semicircular tube from MS to P2 insertion; P3 large and globous in ventral view (Fig. 4C) dorsal lobe exiting and partially surrounded by P4; P4 long and narrow. Enteric valve armature (Fig. 5B) composed of six anterior and three posterior cushions. Posterior cushions with small spines becoming larger entering gut lumen. Anterior cushions project into gut lumen, finger-like; composed of fleshy outer lobes and inner ridges, ridges

with each with about 100 thorny spines. Mandibles of soil-feeding type (Fig. 5A). Left mandible with apical tooth twice the size of M1+2, separated by acute angle; a sinuous margin between M1+2 and M3, M3 much smaller than M1+2; molar prominence without ridges, projecting. Right mandible with apical tooth more than twice the size of M1, M2 much smaller than M1, molar plate without ridges and very concave.

Measurements. Length of head with postclypeus (n=10, min.-max., mean mm) 0.74–0.86, 0.80; max. head width 0.81–0.91, 0.87; length of hind tibia 0.86–0.96, 0.90.

Etymology. “Trapezia” refers to the trapezoidal shape of the frontal protuberance in lateral view.

Diagnosis. Soldiers of *D. trapezia* **sp. nov.** are unique among congeners in having a steep frontal protuberance that is narrowly trapezoidal in lateral view and its posterior margin is angled about 60° from plane of the vertex. *Dentispicotermes trapezia* **sp. nov.** is closest to *D. globicephalus* but the protuberance in the latter is triangular in lateral view and its posterior margin is angled about 30° from plane of the vertex. The *D. trapezia* **sp. nov.** worker gut and EVA is very similar to other species that I have examined: *D. brevicarinatus* and *D. cupiporanga* (Scheffrahn 2019).

Key to *Dentispicotermes* soldiers

1	Mandibles without marginal teeth (Emerson 1950, fig. 4)	<i>D. brevicarinatus</i>
-	Mandibles with marginal teeth	2
2	Apical hook about one-third length of entire mandible	<i>D. pantanalis</i>
-	Apical hook about one-seventh length of entire mandible (Fig. 1A)	3
3	Right and left marginal teeth offset (Issa & Scheffrahn 2020, fig. 1)	<i>D. cupiporanga</i>
-	Right and left marginal teeth in-line (Constantino 1999, fig. 151)	4
4	Protuberance shallow; projecting about one-eighth height of head at vertex (Araujo 1969, fig. 3)	<i>D. conjunctus</i>
-	Protuberance steeper; projecting more than one sixth height of head at vertex (Fig. 1B)	5
5	Protuberance triangular in lateral view, posterior margin angled about 30° from plane of vertex (Constantino 1999, fig. 150)	<i>D. globicephalus</i>
-	Protuberance steep, narrowly trapezoidal in lateral view, posterior margin angled about 60° from plane of vertex (Fig. 2A)	<i>D. trapezia</i> sp. nov.

Discussion

A landmark revision of the Neoisoptera Engel *et al.*, 2009, elevated nine subfamilies and revived three more within the genus-diverse Termitidae (Hellemans *et al.* 2024). Hellemans *et al.* (2024) revived the subfamily Amitermitinae Kemner, 1934 to include, among others, the genera *Amitermes* Silvestri, 1901; *Dentispicotermes*; and *Orthognathotermes* Holmgren 1910. Not surprisingly, Hellemans *et al.* (2024) found *Dentispicotermes* and *Orthognathotermes* (both soil-feeders with very similar EVAs) forming a clade, while *Amitermes* (cellulose-feeders with ridged molar plates) is grouped in a separate Amitermitinae stat. rev. clade.

The origin of the *Dentispicotermes* soldier defensive secretion appears to be from labial glands that flow to the salivary ducts via the hypopharynx and out of the buccal cavity (Sobotnik pers. obs., Issa & Scheffrahn 2020 fig. 2B). Once in alcohol, the yellow secretion polymerizes into a rubbery mass and can be dislodged from the soldier mouth parts as a single piece.

Besides *Dentispicotermes trapezia* **sp. nov.**, the Chaco/Pantanal region sensu Turchetto-Zolet *et al.* (2013) has several other endemic termite species including *Cryptotermes camelus* Scheffrahn, 2021; *Cryptotermes chacoensis* Roisin, 2003; *Glyptotermes hickmani* Scheffrahn, 2021; *Tauritermes taurocephalus* Silvestri, 1901; *Heterotermes lauralinearum* Carrijo, 2020; and numerous undescribed soldierless genera and species (Scheffrahn 2019).

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