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*MACUXITERMES TRICERATOPS* (ISOPTERA; TERMITIDAE; NASUTITERMITINAE), A  
NEW GENUS AND SPECIES FROM ISLAND OF MARACÁ, RORAIMA (1)

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## ABSTRACT

*Macuxitermes triceratops*, a new genus and species of the mandibulate-soldier group of *Nasutitermitinae* are described. The type material was collected by one of the authors at the Island of Maracá, State of Roraima., Brazil (3°27'N and 61°21'W) in a rotten fallen tree trunk inside the forest. Drawings are presented of the dimorphic soldier caste and the worker's mandibles. The swollen sides of soldier's head, shaped as a cheek, the pimple-like elevations (major soldier) and the conspicuous protuberances (minor soldier), as well as the morphology of the worker's mandibles, are the diagnostic characters of this new genus.

## INTRODUCTION

The subfamily *Nasutitermitinae* comprises genera with nasute soldiers and genera with mandibulate soldiers. A diphyletic origin of these groups was proposed by Ahmad (1950). Later, Prestwich & Collins (1981) and Prestwich (1983) proposed the hypothesis that the nasute soldier group could have evolved from a species with mandibulate soldiers. The phylogenetic relationships among the genera of mandibulate soldiers and between this group and that with nasute soldiers are poorly understood. Despite the numerous gaps in our knowledge to evaluate the validity and consistence of the groups proposed, we accept the monophyletic origin of the nasute soldier as being the most parsimonious hypothesis.

Polymorphism of soldier cast is a widespread phenomenon throughout the order Isoptera, although its evolutionary significance is far from clear. Among the genera with mandibulate soldiers of *Nasutitermitinae*, dimorphic soldiers were previously reported for *Rhynchotermes diphyses* (Matews, 1977) and for *Cornitermes bequaerti* and *C. weberi* (Cancello, 1989).

The mandibulate-soldier group of *Nasutitermitinae* is endemic to the Neotropical Region and contains eleven previously described genera (Araujo, 1977; Fontes 1985). Here we describe an additional genus and species of this group, that has dimorphic soldier.

## MATERIAL AND METHODS

We based our description on a sample of a single colony collected by one of us (A.G. Bandeira) at the Maracá Ecological Station, Island of Maracá, State of Roraima, Brazil (3° 27'N and 61° 21'W). For a better characterization of this locality see Vanzolini & Carvalho (1991).

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The definitions of measurements used here are in Roonwal (1970) and the correspondence to his codes is the following:

1. "Length of head with nasus".....nr. 12 (p.21)
2. "Length of head to lateral base of mandibles".....nr. 5 (p.18)
3. "Width of head".....nr. 17 (p.23)
4. "Width of pronotum.....nr. 68 (p.42)
- 5 "Length of hind tibia".....nr. 85 (p.45)

The terminology and abbreviations adopted for the parts of the mandibles of worker caste follows Fontes (1987a: figs. 1-3).

### **Macuxitermes, gen. n.**

(Figs. 1-8)

*Etymology:* Macuxi: an Indian people from Roraima.

*Type species:* *Macuxitermes triceratops*.

*Imago:* Unknown.

*Soldier:* Dimorphic.

*Major soldier:* Head as in figures 1-4. Two pimple like elevations on either side of the median line, visible from the side. Sides of head convex, with an anterior protuberance plainly visible in profile (fig. 3) and making anterolateral sharp angle at head contour from above (fig. 1). Robust and conical nasus extending beyond mandibles with the apex slightly curved downwards in profile (fig. 3). Frons convex from base of nasus to postclypeus. Mandibles robust, strongly curved inward, each with a large tooth. Anterior margin of each tooth making acute angle with anterior margin of mandible; posterior margin of the tooth making obtuse angle with posterior margin of mandible. Antenna with 15 articles. Postclypeus broader than long. Labrum short and broad, forwards orientated, sides rounded and apex blunt. Postmentum very short and inflated. Pronotum narrower than head, anterior lobe longer than wide; posterior lobe short and wide (fig. 4); lateral and lateroposterior margins with many irregular and short spines. Lateral margins of mesonotum and metanotum also with short spines. Legs slender.

*Minor soldier:* Head relatively broad and short with peculiar contour as in figures 5-7. Two conspicuous protuberances replace the pimple-like elevations of the major soldier. Sides of head behind antennal sockets swollen as a cheek, with a posterior elbow and an anterior pointed angle orientated downwards. Uprturned funneled nasus, broad at base, extending beyond mandibles. Mandibles as in major soldier, but slender and each one with a small tooth; left smaller than right. Antenna with 15 articles. Transversal wrinkles on the surface of the swollen sides of head, also above and below antennal sockets. Some horizontal wrinkles in the frons-postclypeus region. Base of nasus with small rugosities. Head surface with a punctuated microsculpture. Labrum orientated downwards, tip blunt between mandibles. Pronotum, mesonotum and metanotum as in the major soldier. Legs slender.

*Worker:* Monomorphic. Rounded head, with a postclypeus moderately inflated and short postmentum. Antenna with 15 articles. Lateral and lateroposterior margins of pronotum and lateral margins of mesonotum and metanotum with many irregular, short spines. Legs slender, foretibia slightly thicker. Both mandibles with apical tooth larger than the marginal teeth and with inner margin slightly concave, longer than the anterior margin of the adjoining first marginal tooth; molar regions without ridges.

*Comparisons.* The short and broad head with a long, conical nasus, and the mandibles strongly curved inward without well developed molar region of the soldier caste, are features that resemble the soldiers of *Armitermes*, but the swollen sides of head as a cheek, the pimple-like elevations (major soldier) and the conspicuous protuberances (minor soldier) of *Macuxitermes* readily distinguish the two genera. Also in the worker mandibles there are some differences between *Macuxitermes* and *Armitermes*, at least between this new species and *A. euamignathus* (Fontes, 1987b). The second marginal tooth of the right mandible and the third marginal tooth of the left mandible

are less developed in *Macuxitermes triceratops*. The apical teeth are much more concave than those of *A. euamignathus*.

***Macuxitermes triceratops*, sp. n.**

(Figs. 1-8)

*Etymology*: triceratops: allusion to the "monstrous" appearance of the minor soldier's head.

*Imago*: Unknown.

*Soldier*: Dimorphic.

*Major soldier*: Antenna with 15 articles, III as long as V and shorter than II and IV, that are subequal. Anterior margin of pronotum with a median indentation and posterior margin almost straight. Head with a few scattered bristles and no short hairs. Nasus without bristles, with many short hairs around the fontanelle opening. Labrum with some bristles orientated forwards. Pronotum with a few bristles on anterior margin. Tergites with bristles and short, thick hairs; sternites with bristles and thin hairs orientated backwards. Forecoxa with a row of 4-6 spines on inner ventral surface and a few scattered spines near the trochanter; medium coxa with fewer spines on inner ventral surface and a few thicker hairs; hind coxa without spines. Forefemur with spines and long bristles concentrated on the proximal half; medium femur with fewer spines. Foretibia with a few spines on inner surface, not organized in a row and one on the outer surface; middle tibia with a few spines on the inner surface and two or three thick spines on the outer surface; hind tibia with 6-8 spines shorter than spurs on inner surface. Head yellow to yellow brown; base of nasus the same colour as head but darker at tip. Pronotum, mesonotum and metanotum yellow. Legs pale yellow.

*Minor soldier*: Colour and pilosity of head as in the major soldier. Tergites with a few erect bristles and short hairs orientated backwards. Sternites with long erect bristles and numerous short hairs and some bristles orientated backwards. Some bristles on the upper surface of pronotum and a few on the posterior margin. Legs with some bristles and a few short hairs. Foretibia with a few spines on the inner surface, middle tibia with a few spines on the outer and inner surface and hind tibia with spines on the inner surface not organized in a row. A few spines on the forecoxa ventral inner surface.

Measurements of 18 major soldiers and one minor soldier (in mm):

|   | Major soldier | Minor soldier |
|---|---------------|---------------|
| Length of head with nasus                   | 2.75 — 2.91   | 2.34          |
| Length of head to lateral base of mandibles | 1.44 — 1.56   | 1.25          |
| Width of head                               | 1.66 — 1.78   | 1.53          |
| Width of pronotum                           | 1.02 — 1.10   | 1.00          |
| Length of hind tibia                        | 1.30 — 1.40   | 1.30          |

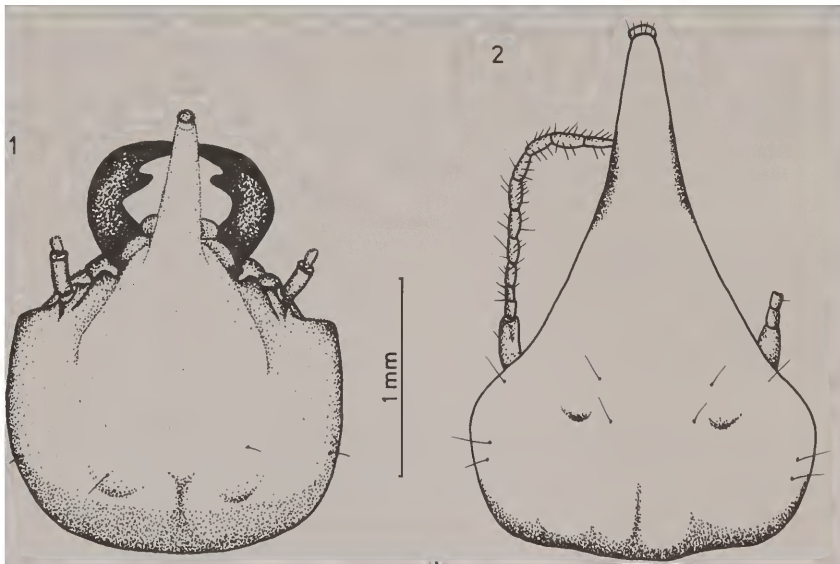
*Worker*: Left mandible (fig. 8-A) with apical tooth (A) larger than first + second marginal tooth (M1+2) with inner margin slightly concave; third marginal tooth (M3) reduced but distinct and molar tooth (MT) visible between M3 and the molar prominence (mpr); molar prominence without ridges and projecting beyond the apex of M3. Right mandible (fig. 8-B) with apical tooth larger than first marginal tooth (M1) and M1 larger than M2; margin of M1 concave and margin of M2 to the molar plate (mpl) concave; molar plate very concave, without ridges. Abdomen voluminous, translucent tergites and sternites showing the digestive tube with a large first proctodeal segment. Head with scattered bristles of two sizes; no short hairs. Long bristles and short hairs sparsely distributed on legs. Bristles on anterior margin of pronotum; long bristles erect and some orientated forwards. Bristles and numerous short hairs orientated ventrally on sternites. Long bristles erect, shorter bristles and numerous short hairs orientated backwards on tergites. Anterior coxa with small spines on ventral inner surface. Each tibia with spines on inner surface not organized in a row and some on the outer surface. Head, thorax and legs whitish; the last five articles of antenna yellow.

*Type material:* Holotype: major soldier, part of lot nr. 468 (INPA), kept separately and labelled: "BRASIL Roraima, Ilha de Maracá. 11.ii.1988. A.G. Bandeira col." Paratypes: major soldiers and workers of lot nr. 468 (INPA), with the same label as the holotype. Major soldiers, workers and one minor soldier of lot nr. 9121 (MZUSP), with the same label as the holotype.

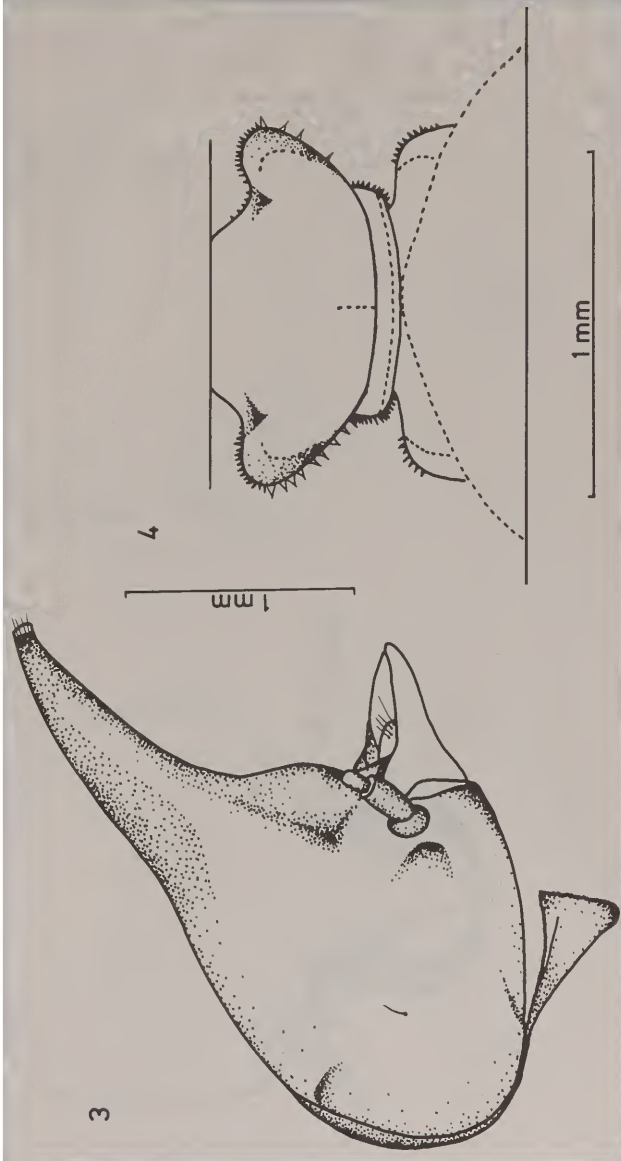
*Bionomic notes:* The climate of Island of Maracá is hot, with a rainy season from May to October and a dry season from November to April. The termites were found inside the forest, in a fallen rotten tree trunk in an advanced state of decomposition and in galleries in the topsoil under the trunk. There were no immature stages of the termites in the wood or in the topsoil galleries, suggesting that the true nest system may be subterranean. The smooth molar regions of the worker mandibles (without ridges — fig. 8) and the copious mineral content of the gut suggest that this species may feed on rotten wood and humus.

#### ACKNOWLEDGEMENTS

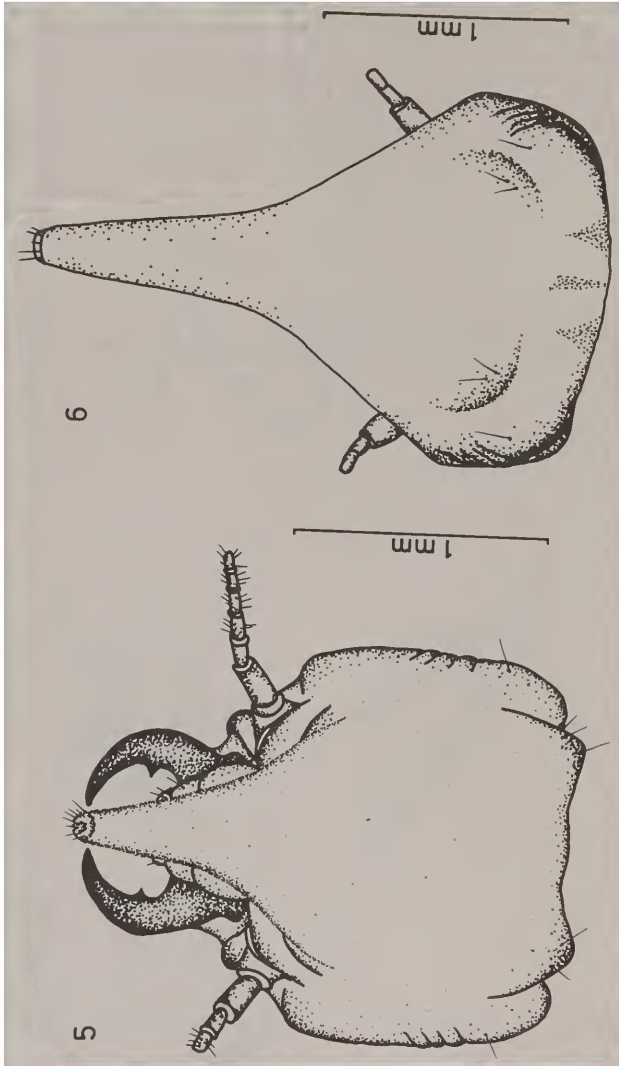
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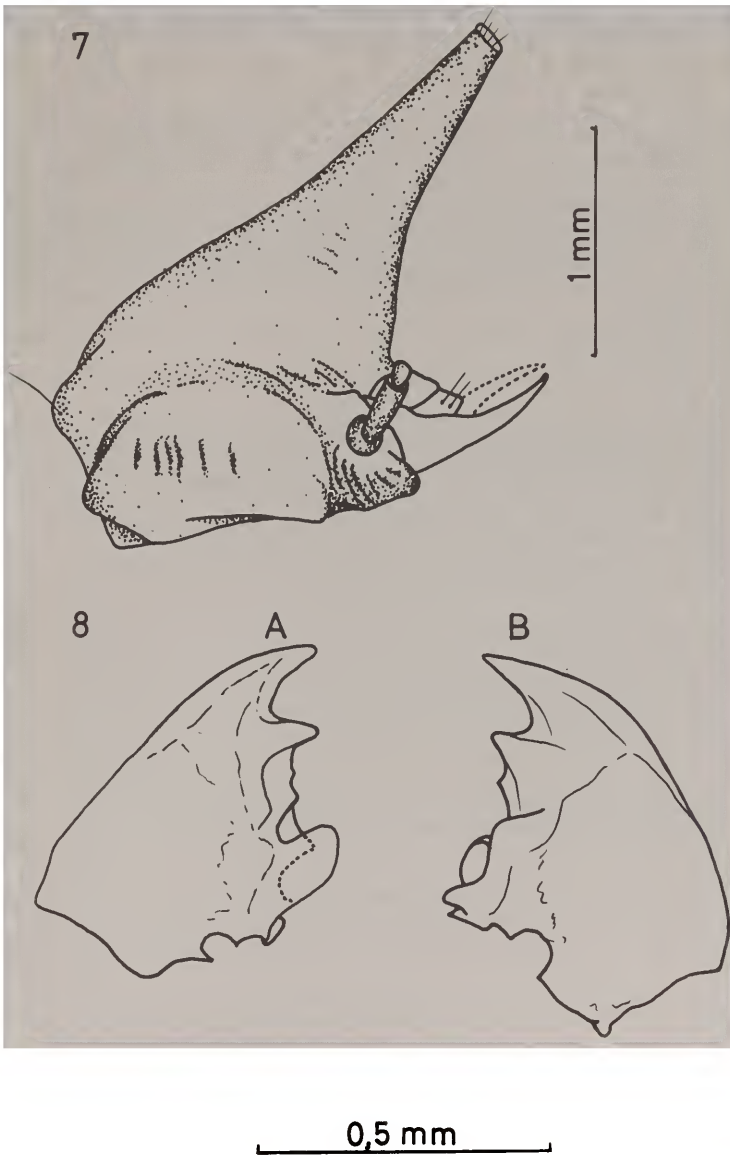
Figs. 1 and 2: Major soldier: 1-head with open mandibles, from above; 2-head from behind.



Figs. 3 and 4: Major soldier 3-head in profile; 4-posterior lobe of pronotum plus mesonotum and metanotum.



Figs. 5 and 6: Minor soldier: 5-head with open mandibles from above; 6-head from behind.



Figs. 7 and 8: 7. Minor soldier: head in profile. 8. Worker: dorsal view of mandibles: 8A-left; 8B-right.

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