

A NEW BRAZILIAN TERMITE SPECIES AND THE FIRST RECORD OF SOLDIER DIMORPHISM IN THE GENUS *ORTHOGNATHOTERMES* (ISOPTERA, TERMITIDAE)ANTHONY RAW
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ABSTRACT

A new species of termite, *Orthognathotermes heberi*, is described and the soldiers illustrated. It is similar in morphology and the structure of its nests to *O. gibberorum* from Mato Grosso. The soldiers are strongly dimorphic, 14% being minor soldiers whose heads are only 59% the length of those of the major ones. No such dimorphism has been recorded in any of the seven species already known in the genus.

INTRODUCTION

Two sizes of soldiers were discovered in a colony of *Orthognathotermes* at Emas National Park, Brazil. As the phenomenon of soldier dimorphism had not been reported previously for the genus we decided to compare our insects with the type material of the most similar member of the genus, *O. gibberorum* Mathews. Several small, but distinctive characters of the major soldier of our species differ from the latter, so we have described the new species and illustrated and given data on the two forms of soldiers.

Orthognathotermes Holmgren is a neotropical genus comprising seven described species (Araújo, 1977). Its soldiers have been reported as being medium sized, monomorphic and characteristically have the head longer than wide and bearing long, relatively slender mandibles and lacking a nasus.

DESCRIPTION

***Orthognathotermes heberi*, sp. nov.**

Holotype: MAJOR SOLDIER. Head capsule and clypeus orange yellow; labrum, antennae and labial and maxillary palps ferruginous; mandibles black merging to chestnut brown basally. Pronotum, mesonotum, posterior edge of metanotum and all coxae pale yellow; first thoracic sternite sepia brown; margins of coxae and trochanters brown; hairs orange yellow with an admixture of white ones; abdominal cuticle transparent showing the colour of the gut contents; remainder of body and legs off-white.

Head barrel-shaped when viewed from above, length 3.20 mm, being c. 1.5 X maximum width; occipital groove distinct; postmentum 5 X longer than width at its mid point; a distinct knob on inner side of each antennal socket; a very low ridge across head slightly behind level of antennal sockets. Head capsule with sparse, short hairs. Labrum trilobate; antenna as long as mandible; mandibles somewhat asymmetrical, the left being 2/3 the length of that of the head capsule; the right mandible bearing a simple knob as its base opposite a double knob on the left one. Each mandible elbowed outwards, the proximal 1/3 rounded in cross section and the distal 2/3 bearing a sharp cutting edge and ending in a stout, inwardly bent point. The basal 1/3 of the left mandible thicker than that of the right (Plate 1).

Type Locality: Parque Nacional das Emas, State of Goiás, Brazil; 1 km west of main gate and 30 m south of park boundary. Material collected 24 September 1982 by Anthony Raw.

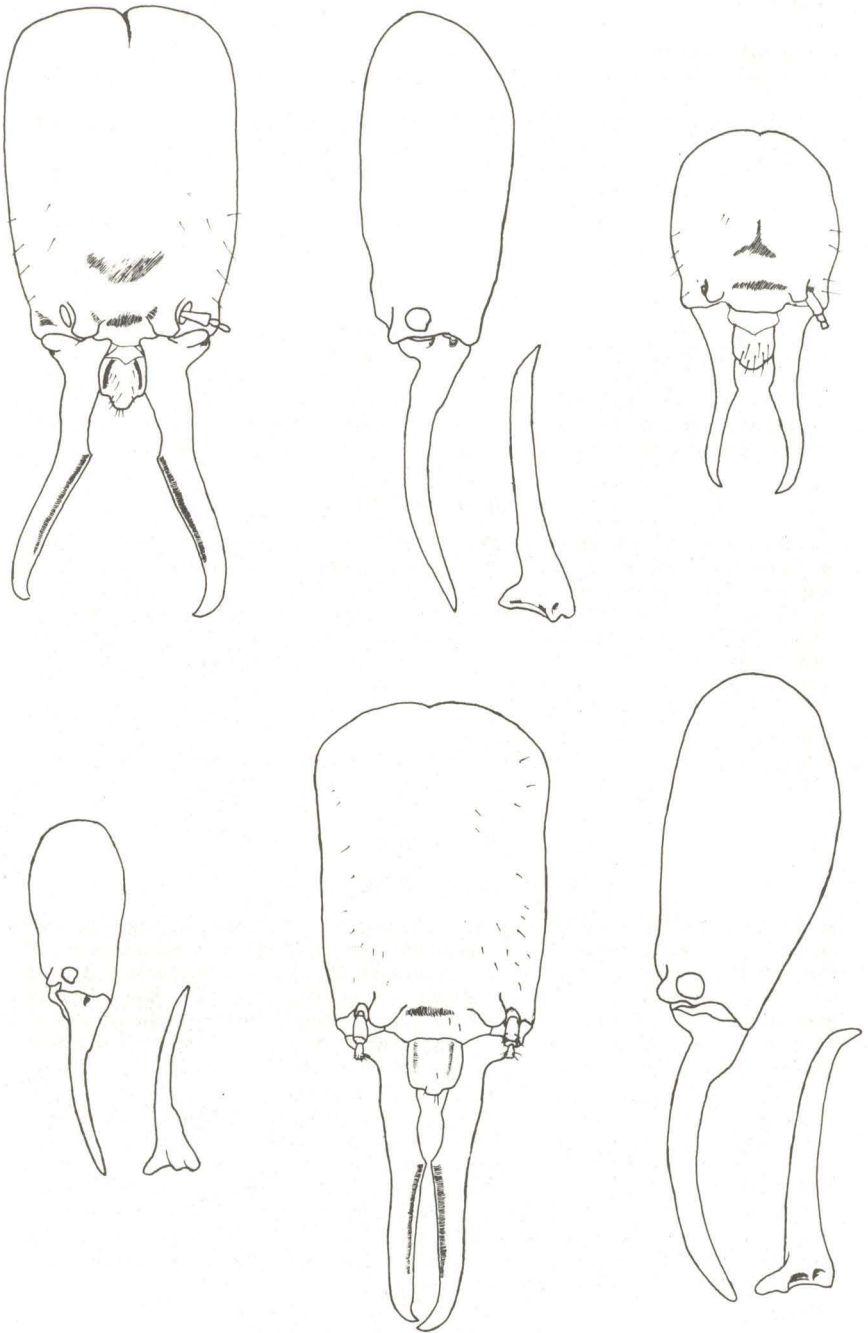


Plate 1 — Upper row (left to right): *Orthognathotermes heberi*, sp. n. — head of major soldiers, dorsal; head and mandible of major soldier, lateral; head of minor soldier, dorsal. Lower row (left to right): *Orthognathotermes gibberorum* — head and mandibles of minor soldier, lateral; head of soldier, dorsal; head and mandibles of soldier, lateral.

Type Repositories: HOLOTYPE in type collection of Universidade de Brasília.

PARATYPES: Universidade de Brasília.

Departamento de Zoologia, Universidade Federal do Paraná, Curitiba.

Museu de Zoologia, Universidade de São Paulo.

University Museum, Oxford, England.

British Museum (Natural History), London.

Smithsonian Institution, Washington D.C.

Museum of Comparative Zoology, Boston.

Author's collection, Anthony Raw.

Author's collection, Ione Egler.

The species is named after Sr. Heber Silva de Oliveira who has given so much of his time to the protection of the park.

SOLDIER DIMORPHISM

A cursory examination of the soldiers revealed a striking dimorphism in head size so the head lengths of all the soldiers recovered from the nest were measured. Once the dimorphism had been confirmed five additional measurements were taken of 20 minor soldiers and 20 major ones (Measurements were made to an accuracy of 0.04 mm).

All six measurements taken of the soldiers proved to be bimodally distributed and of these head length differed most (Table 1). Of the 190 soldiers, 27 (14%) were minor soldiers. The range of the latter, head lengths (0.60 mm) was greater than that among the 163 major ones (0.56 mm) and the interval between the two distributions (0.68 mm) was greater than the range of either distribution (Plate 2). The mean head length of the minor soldiers was only 59% of that of the major ones. No qualitative differences were discovered between the morphologies of the two soldiers castes.

Dimorphism among the workers was not apparent, however, head measurements were taken of the 28 workers to investigate the possibility. The most convenient proved to be head width. Plotting this measurement against the length of the hind tibia showed that, while the soldiers are clearly dimorphic ($= 0.05$), the workers are probably monomorphic (Plate 3).

THE NESTS

O. heberi often constructs its own nest which is subconical, up to 25 cm high and 50 cm diameter. Its surface is covered with loose particles of soil and grasses often grow through the mound. The nests were commonly encountered in the grasslands near the main building of the National Park. *O. heberi* sometimes occupies a part of a nest built by another species of termite and in the National Park was found in the mounds of *Cornitermes cumulans* (Kollar). Redford (In press) treated the biology of *O. heberi* in some detail.

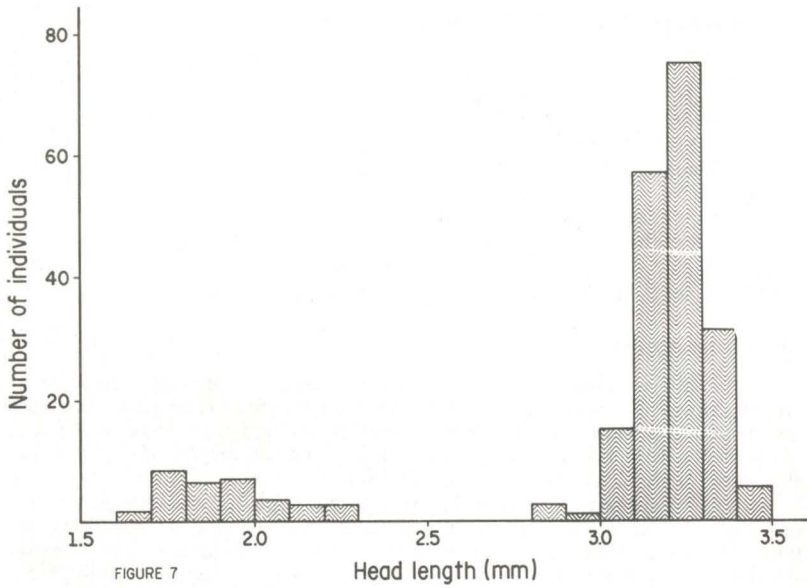


Plate 2 — Distributions of head lengths of the 190 soldiers collected from a colony of *Orthognathotermes heberi*.

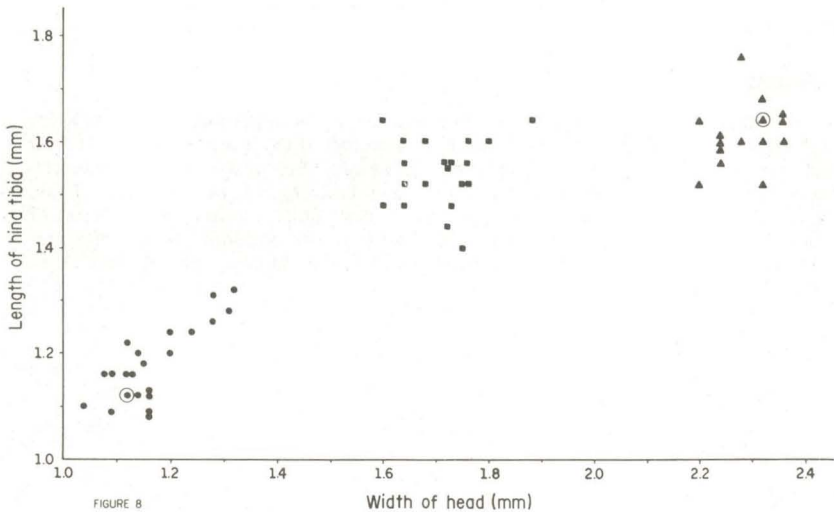


Plate 3 — Lengths of heads and hind tibiae of 163 major (black triangle) and 27 minor (black square) soldiers and 28 workers (black dot) of an *Orthognathotermes heberi* colony. The encircled dot represents five workers and the encircled triangle six major soldiers of identical sizes.

Character	heberi	gibberorum
1. Sagittal furrow down back of head	deeper	shallower
2. Colour of head capsule	orange-yellow	orange
3. Sides of head	more bulging & less tapering	straighter & more tapering
4. Colour of tergal bristles	orange-yellow	yellow-white
5. Central lobe of labrum	much longer than central lobes	little longer than lateral lobes
6. Axis of lobe above antennal socket	more outwardly curved	straighter
7. Back of head viewed from side	less deep	deeper

Table 2 — The distinguishing characters of the major soldiers of *Orthognathotermes heberi* and the soldiers of *O. gibberorum*.

COMMENTS

The known species most similar morphologically to *O. heberi* is *O. gibberorum*. In order to facilitate their separation a table of contrasting characters has been constructed (Table 2). *O. gibberorum* is the only previously described species with an occipital sulcus. It was described from a soldier collected in Mato Grosso state, some 360 km north of Xavantina. A soldier of *O. gibberorum* has been illustrated to aid separation of the two species (Plate 1).

The presence of more than one size of soldier within a colony has been reported for several termite species. Mathews (1977) cites species in six genera having dimorphic or trimorphic soldiers; however, he makes no mention of minor soldiers in *Orthognathotermes*.

REFERENCES

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- Mathews, A. G. A., 1977. *Studies on termites from the Mato Grosso state, Brazil*. Acad. Bras. Ciências, Rio de Janeiro, 267 pp.
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