

SCIENTIFIC NOTE

Geographic Distribution of *Atta robusta* Borgmeier (Hymenoptera: Formicidae)MARCOS C. TEIXEIRA¹, JOSÉ H. SCHOEREDER² AND ANTÔNIO J. MAYHÉ-NUNES³¹Depto. Biologia Animal, ²Depto. Biologia Geral. Universidade Federal de Viçosa, 36570-000, Viçosa - MG³Depto. Biologia Animal, Universidade Federal Rural do Rio de Janeiro, 23890-000, Seropédica, RJ

Neotropical Entomology 32(4):719-721 (2003)Distribuição Geográfica de *Atta robusta* Borgmeier (Hymenoptera: Formicidae)

RESUMO - Dúvidas geradas pelas informações disponíveis na literatura levaram à necessidade de uma revisão na distribuição geográfica de *Atta robusta* Borgmeier e seu status de endemidade. Por meio de coletas em campo, exame de coleções entomológicas e revisão bibliográfica, verificou-se que *A. robusta* ocorre em todos os ambientes de restingas dos estados do Espírito Santo e Rio de Janeiro. Nenhuma referência foi encontrada sobre sua ocorrência fora dos ambientes de restingas, bem como para os estados localizados ao sul do Rio de Janeiro. Sugere-se que *A. robusta* é endêmica das restingas e está restrita à faixa do litoral brasileiro denominado de Terciário Oriental Úmido, devido às barreiras geográficas e ecológicas que impedem sua dispersão.

PALAVRAS-CHAVE: Saúva, endemismo, restinga

ABSTRACT - The available information regarding the geographic distribution of *Atta robusta* Borgmeier is confused and raised the necessity of revision of both its distribution and its endemic status. This paper ascertained the occurrence of *A. robusta* in restingas of Espírito Santo and Rio de Janeiro states, Brazil, through fieldwork, museum visits and bibliographical revision. No reference mentioned its occurrence out of restinga vegetation, as well as in states located south of Rio de Janeiro. We confirmed that *A. robusta* is endemic of restinga vegetation and it is restricted to the strip of the denominated Moist Oriental Tertiary Brazilian Coast. Such a distribution is possibly due to geographical and ecological barriers that obstruct its dispersion to other environments.

KEY WORDS: Leaf-cutting ant, endemic occurrence, coastal ecosystem

Biological studies of leaf-cutting ants of the genus *Atta* have been motivated more by the economic importance than by their ecological role. Species that do not usually invade agroecosystems, therefore, have been virtually ignored in the research, as happened with *Atta robusta*, described by Borgmeier (1939) from São Bento, a locality near Baía da Guanabara in the Duque de Caxias City, Rio de Janeiro, Brazil. Although Mariconi (1970) suggested that *A. robusta* is endemic to the region around the city of Rio de Janeiro, Gonçalves (1960) had already registered its occurrence in the coast of Rio de Janeiro State, from São João da Barra to the Marambaia restinga, even though this information has been largely ignored in subsequent researches. Fowler (1995) and Fowler *et al.* (1996) reinforced their occurrence only in the region around the city of Rio de Janeiro, alerting that this species may be in extinction due to the advance of human-made disturbances in restinga vegetation, which favor its substitution by *A. sexdens rubropilosa* Forel. The available literature information, therefore, is contradictory regarding *A. robusta* geographic distribution, being insufficient to define its endemism and conservation status. This paper provides

additional information on this subject based on fieldwork, museum visits and a wider bibliographic revision.

The revision was carried out through field sampling in restingas and revision of entomological collections. Fieldwork was carried out from October 1996 to July 1998. Twenty-four sites in the Brazilian coast were surveyed in eight localities with restinga vegetation. The sites were distributed from the North of Espírito Santo State (Conceição da Barra) to the North of Rio de Janeiro State (São João da Barra) (Table 1), and three sites were surveyed in each locality. The sites were thoroughly searched for the presence of *Atta* nests, and the leaf-cutting ants found were sampled to further identification based on Mariconi (1970) and Fowler *et al.* (1993). After taxonomic confirmation the specimens were deposited in the following collections: Museu de Entomologia of the Universidade Federal de Viçosa (Viçosa, Minas Gerais), Centro de Pesquisas do Cacau (CEPLAC, Itabuna, Bahia), Museu de Zoologia of the Universidade de São Paulo (São Paulo, SP) and Museu Nacional (Rio de Janeiro, RJ).

The above museums, and the entomological collection of the Reserva Florestal de Linhares, were visited to check for

Table 1. Localities sampled in the Brazilian southeastern coast (October 1996 to July 1998).

Locality	State	Geographic coordinates
Parque Estadual de Itaúnas	ES	18°25'S-39° 42'W
Ilha de Guriri	ES	18°43'S-39° 45'W
Urussuquara	ES	19°55'S-39° 43'W
Pontal do Ipiranga	ES	19°12'S-39° 43'W
Reserva Biológica de Comboios	ES	19°40'S-39° 54'W
Parque Estadual de Setiba	ES	20°44'S-40° 32'W
Marataízes	ES	21°03'S-40° 49'W
São João da Barra	RJ	21°40'S-41° 00'W

the presence of *A. robusta* specimens. The collection of the Reserva Florestal de Linhares has specimens sampled in forest ecosystems contiguous to restinga vegetation, and was expected to lack specimens of *A. robusta* if this species is really endemic to restinga. Specimens were submitted to a new taxonomic confirmation and data regarding collection sites were registered.

A. robusta was found in all sampling sites, being registered a total of 86 nests. No other *Atta* species were found in the restinga vegetation. All specimens deposited in the museums were originated from the Rio de Janeiro State restingas, and were confirmed as *A. robusta*. No *A. robusta* specimens were found in the collection of the Reserva Florestal de Linhares. Such results demonstrated that (i) *A. robusta* is not endemic from the region around the city of Rio de Janeiro, also occurring in restinga environments of Rio de

Janeiro and Espírito Santo states (Fig. 1); (ii) it does not occur in forest ecosystems near restinga vegetation; and (iii) its occurrence has sharply defined northern and southern boundaries, which may be caused by climatic and geomorphologic characteristics of the Brazilian coast.

The Brazilian coast strip from the south of Rio de Janeiro State to the middle of Bahia State (Recôncavo Bahiano) presents moist climate and wide plains with restinga vegetation, named Moist Oriental Tertiary Brazilian Coast (Schobbenhaus 1984). The southern boundary of such strip is the mountain ridge named Serra do Mar, which is a barrier impeding or impairing the link between restinga ecosystems occurring further south, and probably impeding dispersion of alate females of *A. robusta*.

The hypothesis that *A. robusta* is restricted to the Moist Oriental Tertiary Brazilian Coast is reinforced by results obtained by other authors who studied ant fauna in regions located in the South of Serra do Mar and North of Espírito Santo. Mariconi (1965) studied the Oriental region of São Paulo State, where littoral and restinga vegetation are included, not revealing the presence of *A. robusta*. Bonnet & Lopes (1993) carried out an ant survey in dune and restinga vegetation further Southern in Santa Catarina state, and neither have found *A. robusta*. Lopes leaf-cutting ant survey (1998), in restinga vegetation in Paraná State, evidenced the absence of *A. robusta*.

The absence of other *Atta* species in restinga vegetation in Rio de Janeiro and Espírito Santo states is also noteworthy. According to Mariconi (1965) the superficial water table may account for the absence of leaf-cutting ants in São Paulo coast, because the water may impede nest development.

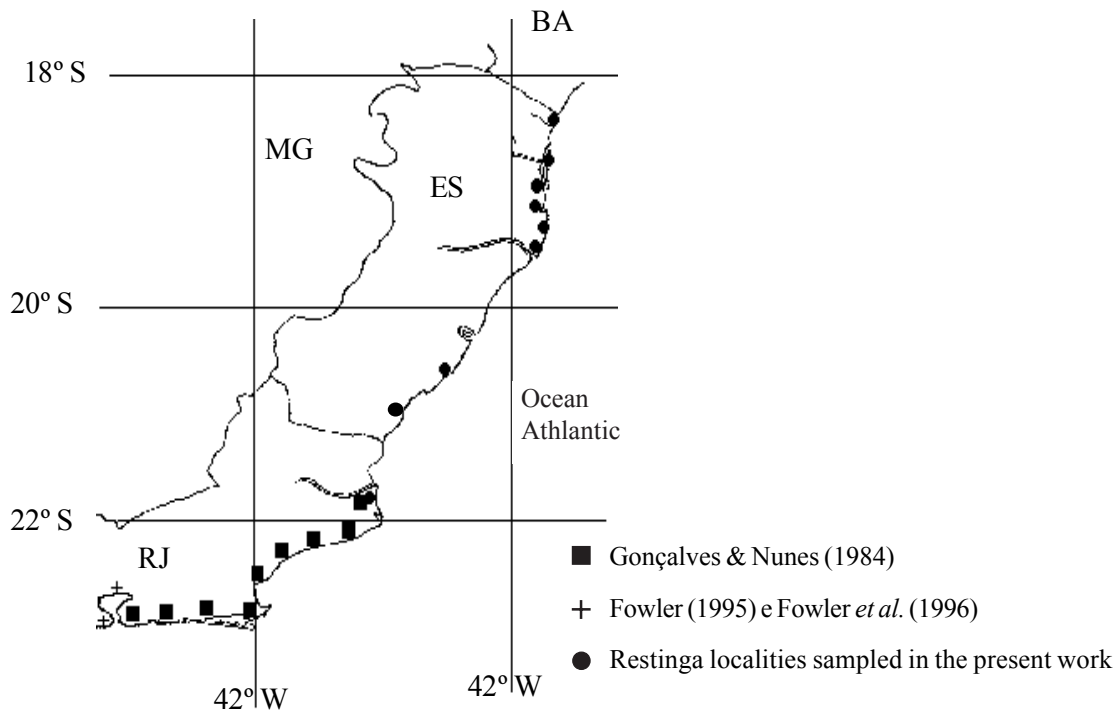


Figure 1. Geographic distribution of *A. robusta* verified in literature review (squares and crosses), field sampling in restingas (circles) and revision of entomological collections (squares).

Further studies must be carried out to explain the evolutionary strategies that differentiate *A. robusta* from the other species of the genus regarding restinga occupation.

There is no evident physical barrier impeding *A. robusta* dispersion beyond the northern limits studied in the present paper. Nevertheless, J. H. C. Delabie (pers. comm.), who exhaustively studied ant fauna in the south of Bahia state, did not register the occurrence of *A. robusta* in the state, including in restinga vegetation.

Geographic barriers explain why *A. robusta* apparently occurs in a restricted strip of Brazilian coast, but do not explain why it is restricted to restinga vegetation. The absence of records of this species outside restinga vegetation suggests that *A. robusta* may have acquired very specific ecological needs, impeding its dispersion to the Atlantic Forest, which is now an ecological barrier to the species dispersion. The absence of *A. robusta* in the Reserva Florestal de Linhares is evidence for the above hypothesis, because the reserve is an Atlantic Forest contiguous to restinga vegetation in the distribution range of *A. robusta*.

Concluding, *A. robusta* may have evolved in the restinga vegetation of a specific strip of the Brazilian coast, and it is impeded to disperse to other areas due to physical barriers, and to historical and ecological factors. Such questions must receive more attention with the study of historical factors involved in restinga formation and of *Atta* phylogeny, which remains little studied. Nevertheless, as the species has a distribution wider than it was though, its conservation status needs to be revised, because its populations seem to be self-maintained in the protected areas of the Brazilian coast.

Acknowledgments

This paper is part of the M.Sc. thesis of the first author. Jacques H. C. Delabie and C. Roberto F. Brandão kindly confirmed the specimen's identifications. Ana Paula Agizzio, João Luiz da Cunha Teixeira, Elaine Bernini and Carlos Alberto Doná helped at the fieldwork. Og DeSouza and Marcelo N. Schlindwein gave important suggestions to a draft version. The authors are supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq grants.

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Received 30/11/02. Accepted 15/07/03.