



Acta Biológica Colombiana

ISSN: 0120-548X

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Universidad Nacional de Colombia Sede

Bogotá

Colombia

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Acta Biológica Colombiana, vol. 19, núm. 2, mayo-agosto, 2014, pp. 305-308

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NEW DISTRIBUTION RECORD OF *Cryptotermes brevis* (ISOPTERA, KALOTERMITIDAE) IN ARGENTINA

Nuevo registro de distribución de *Cryptotermes brevis* (Isoptera, Kalotermitidae) en Argentina

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Received 3 October 2013, first decision 30 October 2013, accepted 29 January 2014.

Citation / Citar este artículo como: CORONEL JM, LAFFONT E, GODOY C, ETCHEVERRY C, OBREGÓN M. New distribution record of *Cryptotermes brevis* (Isoptera, Kalotermitidae) in Argentina. Acta biol. Colomb. 2014;19(2):305-308.

ABSTRACT

The first record of the West Indian drywood termite *Cryptotermes brevis* (Walker, 1853) in the city of Corrientes (Argentina) is reported. Several *C. brevis* colonies were detected inside a local deposit, from wooden crates used for carrying fresh fruits. The observed damage consisted of small rounded holes, partially hollowed wood pieces and presence of debris. The importance of weather factors and the type of material of vegetable and fruit containers in the colonization and dispersion of *C. brevis* in this region of Argentina are discussed. Illustrations of soldiers and reproductive *C. brevis*, and an updated map of the distribution of this termite in Argentina are given.

Keywords: drywood termites, insecta, neotropics, wood-feeders.

RESUMEN

Se presenta el primer registro de *Cryptotermes brevis* (Walker, 1853) en la ciudad de Corrientes (Argentina). Se detectaron varias colonias de esta termita dentro de un edificio en contenedores de madera empleados para el transporte de fruta fresca. Los daños observados consistieron en orificios redondos, piezas de madera parcialmente excavadas y presencia de debris fecales. Se discute la importancia de factores climatológicos y del tipo de material de contenedores de fruta, en la colonización y dispersión de *C. brevis* en esta región de Argentina. Se presentan ilustraciones de soldados y reproductores de *C. brevis* y un mapa actualizado de la distribución de esta termita en Argentina.

Palabras clave: alimentadores de madera, insecta, neotrópico, termitas de madera seca.

In Argentina, the genus *Cryptotermes* Banks, 1906, is represented by two species, the West Indian drywood termite *C. brevis* (Walker, 1853) and *C. chacoensis* Roisin (Roisin, 2003). *Cryptotermes brevis* was reported for the first time in Argentina by Torales *et al.*, 2005, from isolated findings in the cities of Buenos Aires (34° 36'S, 58° 23'W) and La Plata (34° 55' S, 57° 57' W). Recently, the presence of this termite in Buenos Aires was reported by Scheffrahn *et al.*, 2009.

Cryptotermes brevis is a synanthropic species probably originated from the Pacific coastal desert of Chile and Peru (Scheffrahn *et al.*, 2009), is the most widespread drywood termite in the tropics and subtropics worldwide, and is also considered as one of the most destructive structural pests (Bacchus, 1987; Scheffrahn and Krecek, 1999; Constantino, 2002; Milano and Fontes, 2002; Scheffrahn *et al.*, 2003; Evans, 2011). This termite has been recorded in most South American countries (Scheffrahn and Krecek, 1999; Scheffrahn *et al.*, 2009). In Brazil, *C. brevis* is established in the major cities, causing significant damage to structural lumber, furniture, libraries and historical wood pieces (Fontes, 1995; Bandeira *et al.*, 1998, Milano and Fontes, 2002). In Argentina, the only record of damage caused by this insect to wood products was reported by Torales *et al.*, 2005, in a wardrobe located in Buenos Aires.

Cryptotermes brevis is widely distributed in the New World, including Australia, Africa, Northern Europe and most of the inhabited tropical oceanic islands (Scheffrahn *et al.*, 2009).

Recently was recorded from buildings in Spain and Portugal (Nunes *et al.*, 2010).

In December 2010, four colonies of *C. brevis* were found in the Argentine city of Corrientes, in a building located at the Campus Deodoro Roca of the Universidad Nacional del Nordeste ($27^{\circ}28'1.99''$ S, $58^{\circ}46'58.51''$ W, 65 masl) (Fig. 1). The two-floor construction comprises classrooms, laboratories, administrative offices and other facilities. At the second floor, in a deposit where the discarded furniture, cardboard and wooden boxes and other useless materials are placed, colonies of *C. brevis* were found within four wooden crates (0.5 m long x 0.3 m width x 0.26 m height, with 0.5 cm wide boards, made of *Pinus* sp. wood) formerly used for carrying fresh fruits (Fig. 2f). No data about the original locality of these containers was obtained.

The colonies of *C. brevis* were constituted mostly by pseudergates, but soldiers, immatures, one alate and dealates imagoes were also found (Fig. 2d). The *C. brevis* soldier (Fig. 2a) posses conspicuous mandibles, projecting prominently

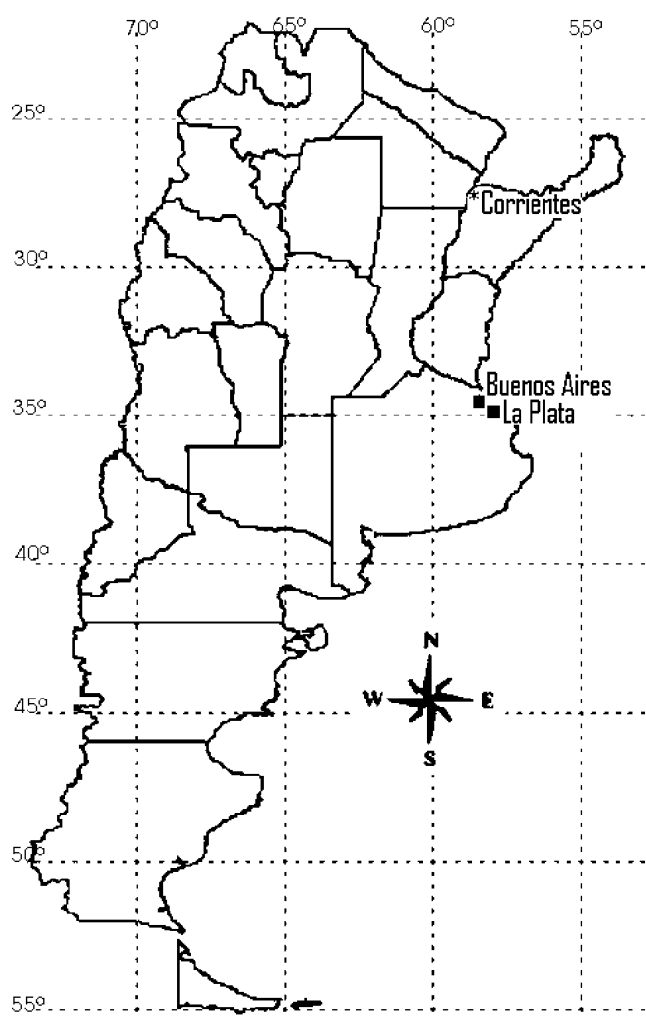


Figure 1. Distribution of *Cryptotermes brevis* in Argentina including the new record (*) in Corrientes city.

beyond frontogenal boundaries of head capsule in dorsal view, with mandible points not covered by labrum. The head capsule (Fig. 2b) has a coarse rugosity, covering the anterodorsal and anterolateral surfaces to eye spots and is constricted laterally in dorsal view near anterior 1/3 and posterior bulbous. The vertex is deeply concave and markedly wider than high in frontal view and dorsofrontally flattened, but it lacks a distinct dorsal incision (Fig. 2c). The genal horns tips are distinctly retracted posteriorly. The pronotum margin is deeply concave medially and biconvex laterally. The imago of *C. brevis* (Figs. 2d and 2e) has a darkbrown general coloration and the head with a characteristic sepia brown darker band and sparse small pale spots between the eyes. The fore wing radius reaches the wing margin at almost half wing length from suture and the radial sector has 6-7 branches. In some individuals, the media extends to the wing tip. The arolium is absent between pretarsal claws.

The specimens were collected from the wood pieces and fixed in 80 % alcohol. For determination of the material collected we used relevant literature (Bacchus, 1987; Scheffrahn and Krecek, 1999; Scheffrahn *et al.*, 2009) and comparison with specimens from the Isoptera Collection (FACENAC) of the Facultad de Ciencias Exactas y Naturales y Agrimensura, Uni-

versidad Nacional del Nordeste. The samples were incorporated to the mentioned collection. The numbers assigned to the samples are FACENAC 2326 (six dealates imagoes, 28 pseudergates, immatures), FACENAC 2327 (three dealates imagoes, one soldier, 41 pseudergates, immatures), FACENAC 2328 (one alate, five dealates imagoes, five soldiers, 29 pseudergates, immatures) and FACENAC 2329 (six dealates imagoes, one soldier, 39 pseudergates, immatures). The photographs of the specimens were obtained with a Canon Eos Rebel T3 camera attached to an Olympus SZH stereomicroscope.

The damage was almost unnoticeable from the external view, only small rounded holes were visible. Inside the partially hollowed pieces, there were simple nests consisting of galleries and chambers occupied by the termites and their fecal pellets or debris (Fig. 2g).

The presence of *C. brevis* has not been detected before in natural and urban environments in northeastern Argentina through extensive termite surveys developed by our research group (Torales *et al.*, 1997; Torales *et al.*, 2005). Therefore, in our opinion, the probable origin of this infestation would be the relatively recent transportation of these wooden boxes from other parts of the country due to commercial movement.

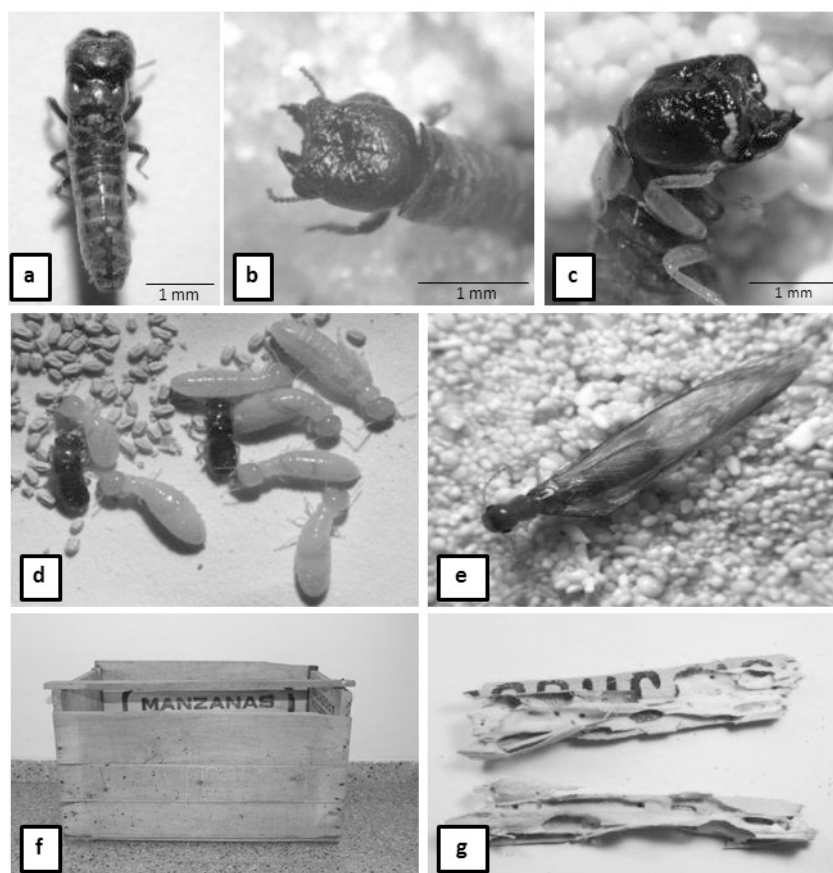


Figure 2. a, b and c: *C. brevis* soldier; a: dorsal view, b: head in dorsal view, c: oblique view; d: *C. brevis* dealates and pseudergates removed from the wood pieces; e: *C. brevis* alate in dorsal view; f: infested wood crate; g: wood boards partially hollowed by *C. brevis* colonies. Bar = 1mm.

Corrientes city receives a large amount of fresh fruit in wooden crates from Rio Negro, Buenos Aires, Mendoza and Formosa provinces and is a major producer of *Citrus*, tomato and pepper which are distributed in the domestic market or exported. According to the current national legislation, the wood of these containers receive a pest control treatment at the moment of the assemblage, but they can be reused several times within the country. The continuous domestic trade using this kind of crates could have facilitated the arrival of *C. brevis* colonies to Corrientes. Similar processes seemed to occur in other countries as most of the current distribution of *C. brevis* corresponds to human introductions by transportation of wood products (Scheffrahn *et al.*, 2009; Nunes *et al.*, 2010).

The climatic conditions of Corrientes city (annual rainfall: 127.3 cm, mean annual temperature: 21 °C with a range between 16-26 °C and mean annual dew point: 15 °C), with a TDP ratio of 2.27 (Weatherbase, 2011), can be considered as included among the optimum TDP values for the establishment and dispersal flight activities of *C. brevis*, according to Scheffrahn *et al.*, 2009. This outdoor climate could allow the spread of infestations from building to building in Corrientes, although the search developed inside the deposit was negative for the presence of this termite inside structural timbers or furniture.

Although to date there is no evidence of the dispersion and establishment of *C. brevis* populations in Corrientes, the present record is an important contribution to the knowledge of its geographical distribution and expands the introduction of this termite pest species in the northeastern region of Argentina. Since *C. brevis* infestations may remain unnoticed for quite a long time and the colonies are small (Nunes *et al.*, 2010), is necessary to continue monitoring the deposit and surrounding buildings. Additional attention should be given to possible future reports on the presence of the species in other city buildings or on the discovery of winged imagoes during the swarming season, in order to detect and minimize potential infestations. Moreover, the finding shows that the crates used to transport fruit within the country, despite its small size, are able to host viable colonies of *C. brevis* and facilitate its spread. It also evidences the need for permanent controls and the application of effective methods of wood protection against termites on these containers.

ACKNOWLEDGEMENTS

This study was supported by the Secretaría General de Ciencia y Técnica, Universidad Nacional del Nordeste (Corrientes, Argentina). Two anonymous referees and the editor provided valuable suggestions on earlier versions of this manuscript.

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