

Termites of the Genus *Cryptotermes* Banks (Isoptera: Kalotermitidae) from the West Indies

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Abstract: A taxonomic revision of the genus *Cryptotermes* occurring in the West Indies is given based on recent collections from the Greater Antilles, Lesser Antilles, and the Bahamas. Seventeen indigenous and four non-indigenous species are described from external morphology of the soldier. The imago caste is also described for all but one species. The indigenous *Cryptotermes* comprise twelve new species, including *C. aequicornis*, *C. cryptognathus*, *C. cylindroceps*, *C. cymatofrons*, *C. darlingtonae*, *C. juliani*, *C. mangoldi*, *C. nitens*, *C. parvifrons*, *C. rotundiceps*, *C. spathifrons*, and *C. undulans*. Five indigenous species are redescribed, including *C. cavifrons* Banks, *C. chasei* Scheffrahn, *C. hemicyclius* Bacchus, *C. pyrodomus* Bacchus, and *C. rhinnocephalus* Bacchus. The imagos of *C. pyrodomus* and *C. rhinnocephalus* are described for the first time. The four non-indigenous species are redescribed including *C. brevis* (Walker), *C. domesticus* (Haviland), *C. dudleyi* Banks, and *C. havilandi* (Sjöstedt). A report of *C. domesticus* in the West Indies could not be confirmed. Distribution maps and a soldier identification key are included for all *Cryptotermes* in the West Indies and Florida.

Key Words: Insecta, drywood termites, taxonomy, identification, distribution, Neotropics, Greater Antilles, Lesser Antilles, Bahamas.

Introduction

Cryptotermes Banks (1906) is the third largest genus in the Family Kalotermitidae after *Neotermes* and *Glyptotermes* (Krishna 1961). *Cryptotermes* spp. occur in all zoogeographic regions, and a number are important pests of wood products. Snyder (1949) listed 26 *Cryptotermes* species worldwide. In his revision of the Kalotermitidae, Krishna (1961) recognized only 23 *Cryptotermes* species. Bacchus (1987) conducted a global revision of *Cryptotermes* following the Oriental and Australian revisions of the genus by Chhotani (1970) and Gay and Watson (1982), respectively. Bacchus (1987) recognized 47 species worldwide.

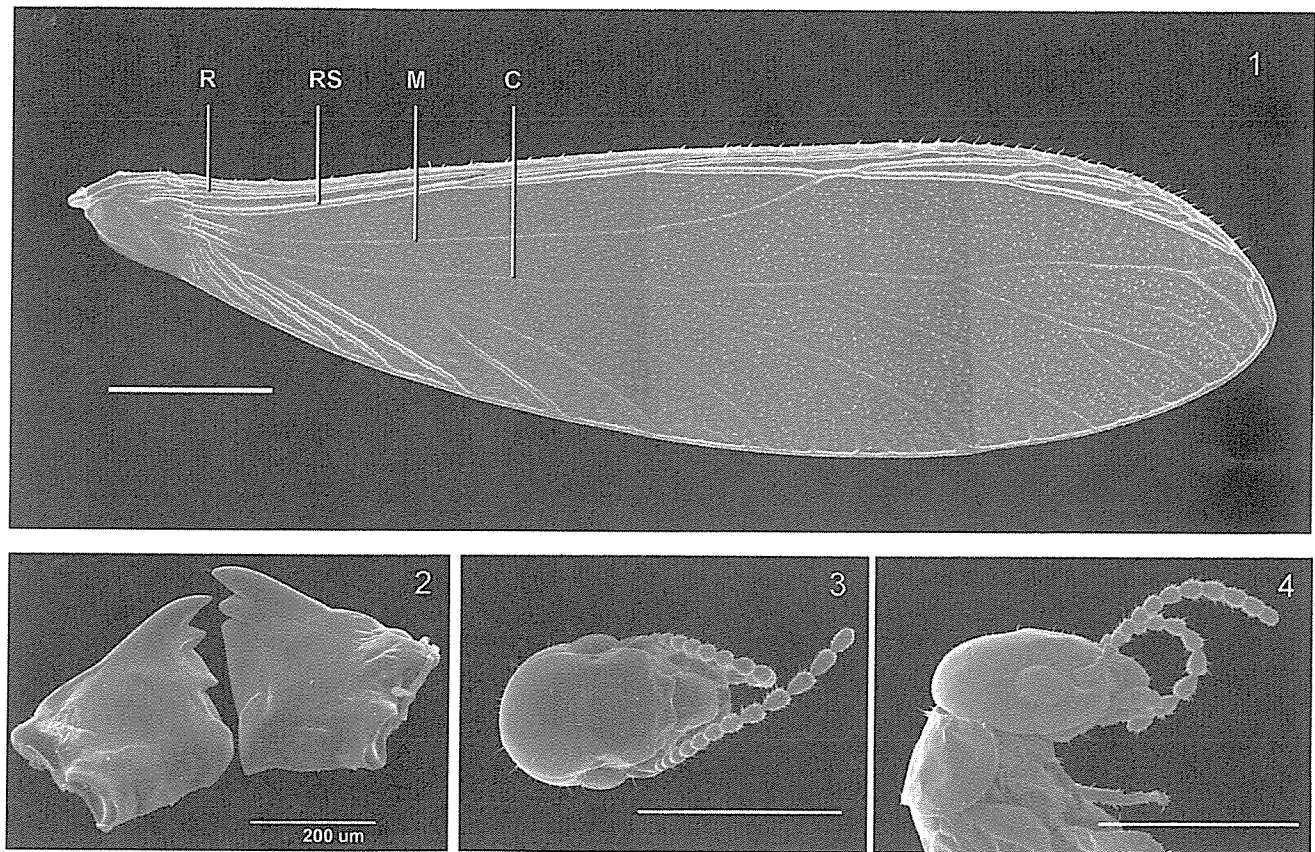
The first *Cryptotermes* species described from the West Indies was *C. brevis* (Walker 1853) from Jamaica. Adamson (1940) collected *C. dudleyi* Banks in Trinidad along with *C. brevis* and two undescribed *Cryptotermes* species. Snyder (1956) reported *Cryptotermes havilandi* (Sjöstedt) from Barbados and *C. cavifrons* Banks from New Providence (Bahamas), Cuba, and several other islands. Araujo (1970, 1977)

reported *C. domesticus* (Haviland) from Trinidad. Bacchus (1987) described 3 new species, *C. hemicyclius*, *C. pyrodomus*, and *C. rhinnocephalus*, from Jamaica, Barbados, and Trinidad, respectively. Most recently, Scheffrahn (1993) described *C. chasei* from Hispaniola and Scheffrahn et al. (1994) listed *C. longicollis* Banks from Hispaniola. After further examination, it was determined that a new species, not *C. longicollis*, had been collected.

We herein describe or redescribe all *Cryptotermes* species now known from the West Indies including 12 new indigenous species, 5 known indigenous species, and 4 non-indigenous species.

Materials and Methods

The source of material for this study includes about 800 *Cryptotermes* nest series (samples) from three survey collections. The first consists of over 8,000 termite samples collected during 1990-1998 from most of the larger land areas of the West Indies with the exception of Cuba and Haiti. The second is a



Figures 1-4. Right fore wing (1) of *Cryptotermes cavifrons* (BA289, Bahamas, N Andros Is, 3 km SE Coakley Town) with radius (R), radial sector (RS), media (M), and cubitus (C) veins labeled; scale bar = 1 mm. Imago mandibles (2) of *C. cavifrons* (BA289). Imago head of *C. mangoldi* (DR0936, Dominican Republic, Janico Arriba) in dorsal (3) and lateral (4) views; unmarked scale bars = 1 mm.

collection of termites from Florida begun in 1985 containing about 1300 samples, including over 700 taken from structures by Scheffrahn et al. (1988). The third collection numbers about 800 samples from Cuba collected between 1964-1975. The absence of collections from Haiti is, at least in part, reconciled by the 1600 samples taken from the Dominican Republic. All collections are in the custody of the authors. The following names of collectors are abbreviated in the text as follows: Paul Ban (PB), James A. Chase (JC), Johanna P.E.C. Darlington (JD), Jan Krecek (JK), Boudanath Maharajh (BM), John R. Mangold (JM), Yves Roisin (YR), Julian de la Rosa (JR), and Rudolf H. Scheffrahn (RS).

Latitude and longitude coordinates of collection localities before 1996 were measured from various surface maps or ESRI Digital Map of the World version 1.0 (Environmental Systems Research Institute, Inc. Redlands, CA). Beginning in 1996, coordinates were recorded at collection sites using a Magellan GPS model 2000 (Magellan Systems Corp, San

Dimas, California) or Garmin GPS model 12 or model 38 (Garmin International, Olathe, Kansas) hand-held global positioning receivers. Coordinates of collection sites were converted to decimal degrees and mapped using ArcView GIS version 3.0a software (Environmental Systems Research Institute, Inc. Redlands, CA) and relevant map data from Digital Map of the World version 1.0.

The morphometrics of specimens preserved in 85:15 (ethanol:water) were measured with stereomicroscopes fitted with calibrated ocular micrometers. Scanning electron micrographs (SEMs) were taken with a Hitachi S530 instrument at 20kV of specimens that were dehydrated in absolute ethanol and 1,1,1,3,3,3-hexamethyldisilazane (Nation 1983) and then sputter-coated with gold or platinum. Some soldier specimens that were coated with buccal exudate or other debris were sonicated in acetone before dehydration. Scanning electron micrographic prints were scanned at 600 dpi, the digital images were cropped to uniform size, detail contrasted with the