

***PROCRYPTOTERMES EDWARDSI*, A NEW DRYWOOD
TERMITE (ISOPTERA: KALOTERMITIDAE) FROM JAMAICA**

RUDOLF H. SCHEFFRAHN, NAN-YAO SU AND JAN KRECEK
Fort Lauderdale Research and Education Center
University of Florida, Institute of Food and Agricultural Sciences
3205 College Avenue, Fort Lauderdale, Florida, 33314, U.S.A.

ABSTRACT

Procryptotermes edwardsi n. sp. is described from soldiers and imagos collected in Jamaica. It is the second species of New World *Procryptotermes* and the smallest species of *Procryptotermes* known worldwide.

Key Words: taxonomy, new species, Neotropics, West Indies, Caribbean

RESUMEN

Se describe *Procryptotermes edwardsi* n. sp. de soldados e imagos colectados en Jamaica. Es la segunda especie de *Procryptotermes* en el nuevo mundo y la especie más pequeña de este genero mundialmente.

Procryptotermes Holmgren is a coastal and island genus of drywood termite that consists of 11 species recorded from southern India, Australia, islands of the Indian

Ocean, Polynesia, and the West Indies (Krishna 1961, 1962; Roonwal and Chhotani 1963, Gay 1975, Thakur 1975, Bose 1979). The soldier of *Procryptotermes* is distinguished from other kalotermitid genera by long, sickle-shaped mandibles and weak to moderate head capsule phragmosis. The imago of *Procryptotermes* is similar to that of *Cryptotermes* Banks in which the median vein is unsclerotized and intersects the radial sector near mid-wing.

Until now, *P. corniceps* (Snyder) (Snyder 1923) was the only *Procryptotermes* species known from the New World (Constantino 1998). During a 1997 termite expedition to Jamaica, a new species of *Procryptotermes* was collected. The descriptions of the soldier and imago of *Procryptotermes edwardsi* n. sp are provided herein.

MATERIALS AND METHODS

Morphometrics of specimens preserved in 85:15 ethanol:water were made with a stereomicroscope fitted with a calibrated ocular micrometer. General measurements are as described in Roonwal (1970). In soldiers, head length to genal horns is measured from the median posterior of head to tip of horns, and frontal flange width is equal to head width at the frontal flange. Scanning electron micrographic prints were scanned at 600 dpi, the digital image outline traced using photograph-enhancing software (Photo Magic, Micrografx, Inc., Richardson, TX), the background converted to black, and scale bar digitally redrawn.

Latitude and longitude coordinates were measured at collection sites using a Magellan GPS 2000 hand-held global positioning receiver (Magellan Systems Corp, San Dimas, CA). Coordinates of collection sites were converted to decimal degrees and mapped (Fig. 2) using ArcView GIS version 3.0a software and relevant map data from Digital Map of the World version 1.0 (Environmental Systems Research Institute, Inc. Redlands, CA).

The holotype soldier and morphotype imago will be deposited in the collection of the American Museum of Natural History, New York. Paratype soldiers and imagos will be deposited in the National Museum of Natural History (Smithsonian Institution), Washington, DC; the Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville; and in the authors' collection at the University of Florida Research and Education Center, Ft. Lauderdale.

Procryptotermes edwardsi Scheffrahn, **New Species**

Imago (Table 1).

General color yellow-brown except as noted. Head darker brown on vertex between ocelli; epicranial suture partly delineated by lighter patches. Pronotum paler toward middle; T-shaped pattern on midline even paler. Femora and anteclypeus pale yellow. Wing scales yellow-brown; sclerotized veins, including costa, subcosta, radius, and radial sector brown; wing membranes with very faint yellow-brown tint. Head capsule with few scattered short or very short bristles; lateral margins of pronotum fringed with more numerous alternating patterns of short and long bristles. Short and long bristle pattern also on tergites and sternites. Antennae with 13-16 articles, usually 15 or 16; relative length formulae variable, usually $2 > 3 > 4 = 5$, $2 = 3 = 4 = 5$, or $2 > 3 = 4 = 5$. Ocellus white, oval, touching eyes; eyes not noticeably large or small, slightly triangulate with straight margins bordering antennae, ocelli, and posteroventral margins of head. Pronotum about as wide as head capsule; anterior margin broadly

TABLE 1. MEASUREMENTS OF *PROCRYPTOTERMES EDWARDSI* IMAGO.

| Measurement in mm (n = 3 ♀, 9 ♂ from 3 colonies) | Range | Mean ± S. D. | Morphotype |
|---|-----------|--------------|------------|
| Head length with labrum | 1.05-1.21 | 1.12 ± 0.052 | 1.13 |
| Head length to postclypeus | 0.92-1.01 | 0.97 ± 0.032 | 1.01 |
| Head width, maximum at eyes | 0.83-0.88 | 0.85 ± 0.017 | 0.87 |
| Eye diameter, maximum | 0.25-0.29 | 0.26 ± 0.013 | 0.28 |
| Eye to head base, minimum | 0.11-0.14 | 0.12 ± 0.012 | 0.14 |
| Ocellus diameter, maximum | 0.11-0.13 | 0.12 ± 0.006 | 0.12 |
| Pronotum, maximum length | 0.59-0.67 | 0.62 ± 0.024 | 0.67 |
| Pronotum, maximum width | 0.77-0.85 | 0.81 ± 0.030 | 0.85 |
| Total length with wings | 7.31-8.38 | 7.88 ± 0.37 | 7.74 |
| Total length without wings | 2.98-5.33 | 4.15 ± 0.80 | 4.05 |
| Forewing length from suture | 5.68-6.25 | 6.02 ± 0.15 | 6.11 |
| Forewing, maximum width | 1.42-1.65 | 1.54 ± 0.086 | 1.60 |

concave, posterior margin straight or weakly incised; posterolateral corners broadly rounded. Median veins unsclerotized, joining radial sectors at about 3/5 wing length from sutures; radial sectors each with 4-5 anterior branches. Arolia present.

Soldier (Fig. 1A-C, Table 2).

Head orange-brown to dark orange-brown at postclypeus, grading unevenly to pale yellow near occiput; epicranial ("Y") suture delineated by faint, narrow, and even lines. Mandibles dark red-brown distally, grading to light orange-brown at basal 1/5-1/3. Anteclypeus hyaline; labrum orange-yellow; antennae orange-brown. Pronotum pale yellow-brown with hyaline midline. Scattered medium and short bristles on head capsule and pronotum. Frontal flange very slightly elevated and marked by very weak striated rugosity. Flange divided by flat median plane or weak concavity; plane or concavity continuous with vertex. Slope of frons plane angled about 35-40° below plane of vertex. Genal horns small, triangulate; axes diverging laterally in dorsal view. Frontal protuberances absent. Labrum spatulate or forming apical point when anterolateral corners curved. Eye spots hyaline, elliptical; posterior to and even with antennal fossae. Mandibles very long and curving evenly about 70° in distal 2/5. Left mandible with three marginal teeth; first and second narrow and conical, third weak and broad-based. Right mandible with two acute, shelflike marginal teeth. Antennae with 12-14 articles; relative length formulae variable; usually 2 > 3 < 4 = 5, 2 > 3 = 4 = 5, or 2 = 3 > 4 = 5. Pronotum narrower than head; anterior margin weakly incised, posterior margin rounded or with slight concavity near middle.

Comparisons.

The imago and soldier castes of *P. edwardsi* are the smallest *Procryptotermes* described. The imago of *P. edwardsi* is very close to *P. corniceps* except that the former is smaller in all measurements taken (without overlap) and has about two fewer antennal articles.

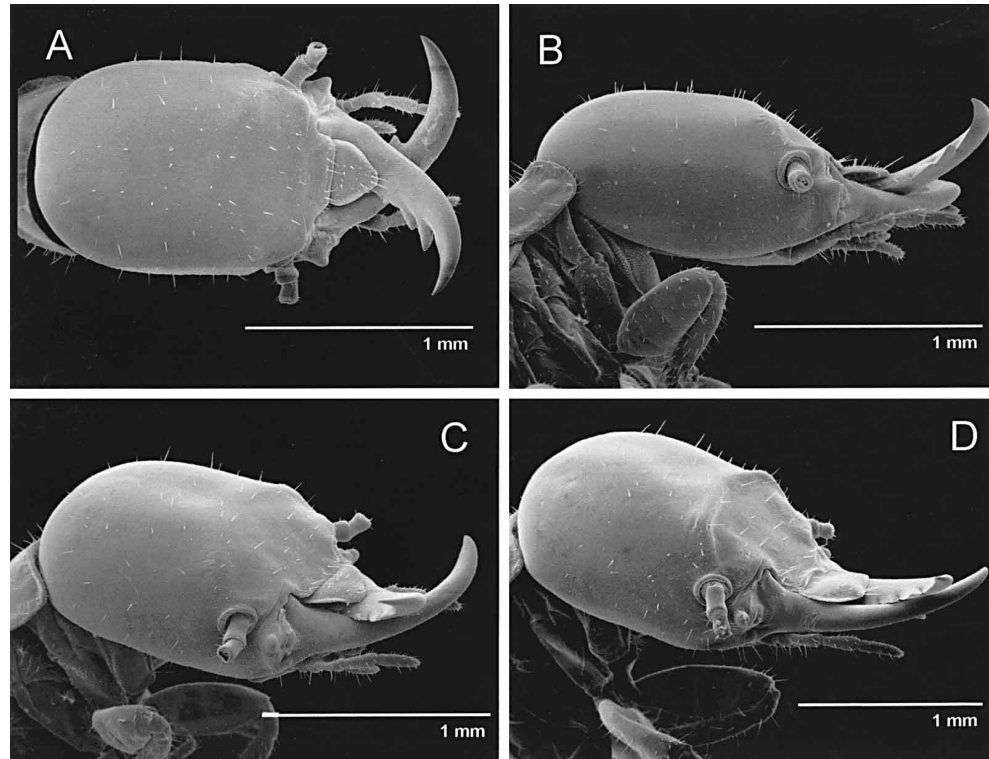


Fig. 1. Dorsal (A), lateral (B), and oblique (C) views of soldier head capsule of *Procryptotermes edwardsi* from Cousin Cove, Jamaica. Oblique view of *P. corniceps* soldier (D) from Baños de Coamo, Puerto Rico. Antennae partially removed for clarity.

TABLE 2. MEASUREMENTS OF *PROCRYPTOTERMES EDWARDSI* SOLDIER.

| Measurement in mm (n = 13 from 3 colonies) | Range | Mean \pm S. D. | Holotype |
|---|-----------|------------------|----------|
| Head length to tip of mandibles | 2.10-2.35 | 2.21 \pm 0.087 | 2.10 |
| Head length to median flange | 0.86-1.04 | 0.95 \pm 0.047 | 0.94 |
| Head length to genal horns | 1.26-1.36 | 1.32 \pm 0.028 | 1.31 |
| Frontal flange width | 0.82-0.87 | 0.83 \pm 0.015 | 0.85 |
| Genal horns outside width | 0.91-0.96 | 0.94 \pm 0.019 | 0.91 |
| Head width, maximum | 1.00-1.05 | 1.02 \pm 0.013 | 1.01 |
| Head height, excluding postmentum | 0.75-0.83 | 0.80 \pm 0.024 | 0.78 |
| Pronotum, maximum width | 0.84-0.93 | 0.89 \pm 0.029 | 0.87 |
| Pronotum, maximum length | 0.52-0.64 | 0.57 \pm 0.028 | 0.56 |
| Left mandible length; tip to ventral condyle | 1.11-1.23 | 1.18 \pm 0.031 | 1.19 |
| Total length | 3.47-5.10 | 4.25 \pm 0.48 | 4.16 |

The soldier of *P. edwardsi* is close to *P. corniceps*, but the former is smaller in all measurements. The frontal flange of the *P. corniceps* soldier is acutely elevated to form a continuous ridge or brow between the vertex and frons (Fig. 1D). The frontal flange of *P. edwardsi* is only faintly elevated laterally without forming a distinct or continuous ridge between the vertex and frons (Fig. 1B, 1C).

Type Material.

Holotype soldier and 4 paratype soldiers: Jamaica, Cousin Cove, 18.441°N 78.235°W, 31.v.1997 (coll. no. JA769). Morphotype imago, 5 paratype soldiers and 5 paratype imagos: Jamaica, Discovery Bay, 18.479°N 77.440°W, 24.v.1997 (JA095). Three paratype imagos: same data as JA095, second colony from location (JA097). Three paratype imagos: Jamaica, 2.3 km N Frenchman, 17.851°N 77.491°W, 29.v.1997 (JA535). Three paratype soldiers: Jamaica, Font Hill, 18.047°N 77.947°W, 30.v.1997 (JA641). Additional *P. edwardsi* material examined: Jamaica, Hellshire Point, 17.882°N 76.909°W; imagos, soldiers, pseudergates; 28.v.1997 (JA433). All above material taken collectively by P. Ban, J. A. Chase, J. Krecek, B. Maharajh, J. R. Mangold, and Y. Roisin.

Procryptotermes corniceps material examined. Turks and Caicos Is., Providenciales Is., Sapodilla Bay, 21.75°N 72.28°W, 4.iv.1989, B. Diehl coll., imagos and soldiers, (TC031). Puerto Rico, Baños de Coamo, 18.03°N 66.37°W, imagos and soldiers, 29.v.1993 (PR024). Puerto Rico, Guanica Forest State Park, 17.97°N 66.88°W, imagos and soldiers, 30.v.1993 (PR102). Puerto Rico, 2 km E Recio on Hwy 3, 17.98°N 65.92°W, soldiers, 1.vi.1993 (PR205). Puerto Rico, Quebradillas beach, 18.48°N 66.95°W, soldiers, 3.vi.1993 (PR289). All Puerto Rican material taken collectively by J. A. Chase, J. R. Mangold, J. de la Rosa, and R. H. Scheffrahn.

Etymology.

Named after Jeff Edwards, Dead Bug Edwards Termite Company, Plantation, Fla., for his financial support and volunteerism benefiting the study of drywood termite biology and control.

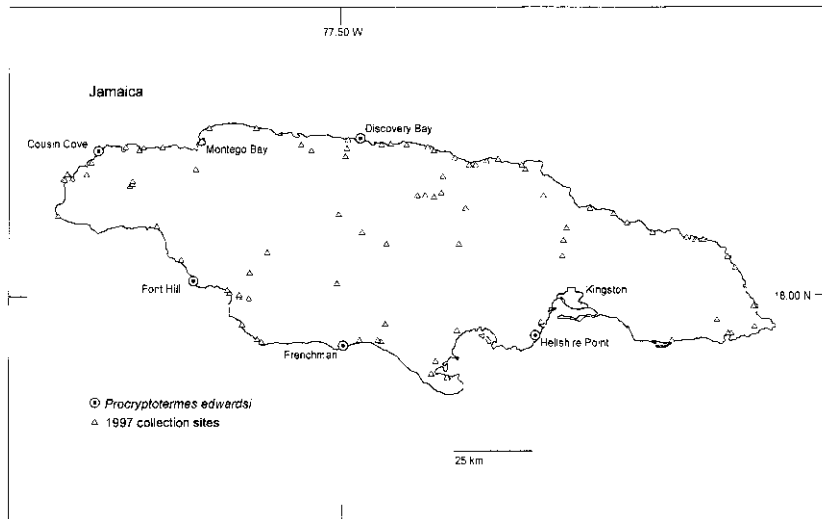


Fig. 2. Localities of *Procryptotermes edwardsi* and 1997 termite collection sites for Jamaica, West Indies.

BIOLOGY

In May 1997, we collected colonies of *P. edwardsi* from 5 of 85 sites surveyed for termites in Jamaica (Fig. 2). Of these 85 sites, 78 yielded one or more kalotermitid samples in the genera *Cryptotermes*, *Glyptotermes*, *Incisitermes*, *Neotermes*, and/or *Procryptotermes*. Colonies of *P. edwardsi* were encountered in dead limbs of various woody hosts in the type localities, all of which were coastal habitats broadly encompassing Jamaica. Ten of 13 colonies contained winged imagos, suggesting that dispersal flights commence in late spring and early summer.

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